

ANNUAL REPORT
OF THE
DEPARTMENT OF AGRICULTURE
OF THE
NORTH-WEST TERRITORIES

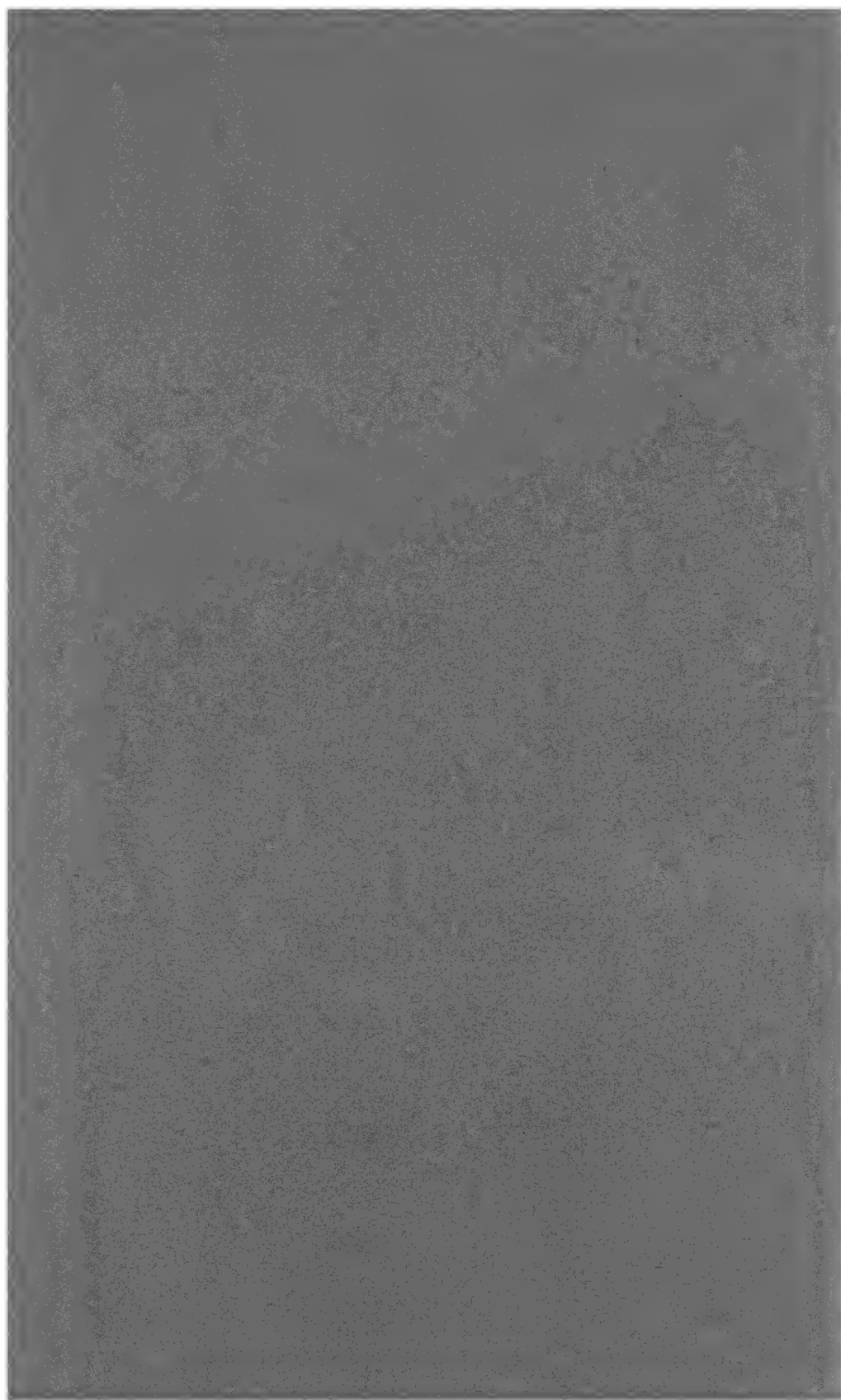
1899

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY



REGINA
JOHN ALEXANDER REID, Queen's Printer for the Territories

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DEPARTMENT OF AGRICULTURE,
Regina, March, 1, 1900.

To His Honour AMEDEE EMMANUEL FORGET,
Lieutenant-Governor of the North-West Territories.

SIR,—

I have the honour to submit herewith the Annual Report of the
Department of Agriculture for the year 1899.

I have the honour to be, Sir,

Your obedient Servant,

G. H. V. BULYEA,

Commissioner of Agriculture.

REPORT
OF THE
DEPUTY COMMISSIONER

DEPARTMENT OF AGRICULTURE

REGINA, MARCH 1, 1900.

G. H. V. BULYEA, Esq., M.E.C.,
Commissioner of Agriculture

SIR,—

I herewith have the honour to submit for your approval the second annual report of the Department of Agriculture for the North-West Territories, which contains a statement of the work done under your direction during the year.

METEOROLOGICAL.

At the end of last year observation stations were in operation in the Territories at the following points: Regina, Indian Head, Medicine Hat, Cannington Manor, Edmonton, Macleod, Swift Current, Yarrow, Qu'Appelle, Pense, Calgary, Pincher Creek, Prince Albert, Grenfell, Battleford, Banff, Oonikup, Muscowpetung, Kuce Hill, Calgary (2), Fort Simpson, Henrietta, Alameda, Chaplin, Duck Lake and Moose Jaw.

During the past season the following additional observation stations have been opened through the Department, which are now reporting regularly: Red Deer, Wood Mountain, Langenburg, Mosquito Creek, West Beaver Hills, St. Mary's River, Stirling, Colles, Innisfail, Wetaskiwin, Didsbury, Crane Lake, Coutts, Saskatoon, Okotoks and Saltearts.

The meteorological observation points in the Territories now number 44. The observers perform their duties without any remuneration other than is given in the shape of reports, bulletins, etc., issued by the Meteorological Department at Toronto and this Department, and great credit is due them for the painstaking manner in which, with but very few exceptions, their work has been done.

Arrangements have now been made between the Toronto office and this Department whereby a telegraphic summary of weather conditions in the Territories will be sent monthly in time to incorporate the information in the monthly weather map.

During the year the phenological observation register of the Dominion meteorological service was placed at the disposal of the Department and many valuable abstracts were taken respecting the occurrence of phenomena bearing upon the prosecution of agriculture in various portions of the country. Too much stress cannot be laid upon the importance of securing reliable data as to precipitation and the periodical occurrences of killing frosts during the growing season in the various portions of the Territories. Farming operations in all countries are based more or less upon an estimate of these two great factors affecting plant life, and the closer the estimate approaches correctness the more successfully

can farming operations be carried on in any particular locality. Reliable climatic records are, therefore, practically the basis of all agricultural experimental work.

The following is a brief summary of the records of the Dominion meteorological service of the temperature and precipitation conditions prevailing throughout the North-West Territories during each month of the year.

January.—The month opened with decidedly cold weather, 20° below zero being generally recorded. During the first ten and last five days of the month, minimum temperatures of -40° were recorded at several places. Between these periods, however, there was some comparatively mild weather, when temperatures between 40° and 50° were reported from many stations. Many of the days were bright. Some severe gales passed over the Territories during the month, and the snow, although allowing fair sleighing, was much drifted.

February.—The weather was intensely cold, fine and comparatively dry. The period from the first to the eleventh was probably one of the most severe ever experienced in the country, and during this long interval the minimum night temperature was usually between 30° and 40° below zero, and the maximum, except in portions of Alberta on the fourth, fifth, sixth and eleventh, never rose above zero and not infrequently it was from 20° to 30° below zero. Mild weather set in over Alberta on the twelfth, when maxima between 40° and 50° were daily recorded; the highest reading being 55° on the eighteenth. On the twenty-first another cold period was ushered in. On the last day of the month the depth of snow on the ground was from two to eight inches, and sleighing after the eighteenth was very bad in many districts.

March.—This month was remarkable in all localities for a continuance of the excessive cold which was the chief characteristic of the February weather: and the month was by far the coldest March in the Territories while official records have been kept, that is to say, for the last twenty-five years. The precipitation was somewhat above the average and altogether the weather was unusually severe, showing no signs of moderating at the end of the month.

April.—The weather was exceptionally cold during the first few days of the month, the temperature falling to from -10° to -20° on the first and second in Saskatchewan and Alberta. On the fifth the weather moderated and continued mild to the twenty-sixth. On the twenty-sixth it again turned colder. All observers were agreed that the season was backward, obviously owing to the exceedingly cold March and the early days of the month. Although there was much bright sunshine warm rains were needed. In Alberta seeding began about the seventh. Spring birds began to arrive about the second week, and frogs were heard very generally about the sixteenth and seventeenth.

May.—The weather was exceptionally dull, cold and wet, the temperature being as much as six and seven degrees below the average in Alberta, and the precipitation considerably above in most districts. Frosts were rather frequent during the month, the temperature falling to 12° at some places. These frosts, however, though retarding vegetation, do not appear to have done much damage and by the thirty-first the conditions were much improved. Edmonton reports crops all in and further advanced than for several years at same date; hay promises abundant crop, as do small fruits. **Calgary.**—Grass and grain well for-

ward; trees leafing out. Medicine Hat—May was unusually cold and wet; vegetation, though unprecedentedly rapid, was one month later than usual; native poplar and cotton wood beginning to leaf; wheat three inches above ground. Prince Albert—Farming backward on account of wet. Battleford—Weather was cold; spring very backward and so was vegetation; seeding about over; ground was in fine shape with the month's precipitation; warm weather being needed. Swift Current—Three days' snowstorm at the beginning of the month, attended with very low temperature on the twelfth; heavy rains on eight days and thunderstorms on three consecutive days; hail for a few minutes on twenty-fifth but did not damage garden stuff; slight frost on night of twenty-ninth with no bad effects; garden crops doing well in consequence of good rains; prairie looking very green. Qu'Appelle—Trees well in leaf; seeding nearly finished; ground very wet.

June.—The temperature was cool and wet and in some places the temperature was as much as five degrees below the average. There was, however, much bright sunshine, which had a very beneficial effect. At a few places light frosts occurred on or about the fifth, but apparently no damage was done. Thunderstorms were unusually frequent, but not destructive; and vegetation, though somewhat backward on the thirtieth, was in exceptionally vigorous condition. From reports received at the end of the month it was obvious that with bright skies and with but average July weather the crop prospects were exceedingly good.

July.—During this month there was much bright sunshine, but in some districts much rain fell, whilst the mean temperature was about average. Thunderstorms occurred frequently, and in a few places were accompanied by hail, though but little damage appears to have been caused thereby. The maximum temperatures of the month occurred on the seventeenth and eighteenth, 102° being recorded at Chaplin, and at most places they were well above 90° . Very little damage occasioned by hail. Battleford—Haying begun, but delayed through wet. Medicine Hat—All crops promised a heavy yield; barley cutting expected to begin about the first August. Qu'Appelle—Wheat well headed; root crop good but backward; hay good, much water lying. Prince Albert—Crops unusually well advanced but in good condition; sloughs all full. Swift Current—Haying begun and very plentiful; country looks fine. Calgary—Cool, wet weather much retarded ripening and haying. Edmonton—Crop prospects magnificent, all cereals good, so are roots.

August.—Throughout the greater part of the Territories the weather was cool, cloudy and unusually wet. In some places the total rainfall was three times the average amount and the temperature was seven degrees below the average at several stations. Light frosts occurred in a few districts but did no damage, nevertheless farm crops were backward and damage to grain before ripening by later frost was threatened. Edmonton—Continued wet weather kept harvesting back; grain ready to cut but very little done; comparatively no hay made; roots promised an enormous yield. Calgary—The continued rains prevented haying and harvesting operations, and at the same time so saturated the ground that considerable fine weather was needed before the land was fit to work; fears of frost before the crop ripened were generally entertained; first frost occurred on the twenty-eighth. Prince Albert—Seven severe hailstorms occurred in several parts of the district, destroying large quantities of grain; ripening delayed by heavy rains. Very little dam-

age, if any, by frost on the thirtieth. Medicine Hat—August unusually wet and cold. Battleford—Haying almost at a standstill from continued rain; grain crops fairly good. Temperature at Duck Lake 28° on the thirty-first, which damaged the garden stuff a little but not the grain. Swift Current—Frequent heavy rains have retarded haying, much hay land still under water. Qu'Appelle—Grain being cut, well filled, ripening fast; hay abundant; roots excellent.

September.—The weather conditions during September were for the most part fine, with temperatures above the average, and this favourable change from the continued wet and unseasonable weather of the preceding months had a most beneficial effect on crops generally. Qu'Appelle—Wheat all cut by fifteenth; birds flocking early. Battleford—Heavy grain crops of this district were safely harvested without slightest injury from frost; root crop also very heavy. Edmonton—Harvesting completed; stacking started and in some places threshing commenced; yield and samples fine; hay short owing to wet summer. Calgary—Fine weather relieved the anxiety of both farmers and stockmen; the greater portion of the crop harvested, while the prairie grass cured well and promised abundant fodder for stock on the ranges during the coming winter.

October.—The weather, although fine and warm from the first to the eighth, and also during the last few days of the month, was exceedingly cool and unsettled during the intervening period, and the mean temperature for the month was below the average. At most places the rainfall was average or somewhat above. Snow fell on several occasions but melted away by the end of the month. A snowstorm at Calgary, followed by humid weather, delayed stacking for a fortnight. At Edmonton stacking was finished and threshing in full swing; a good portion of the root crop was in the ground and injured by frost. Battleford—Grass on the range reported as remarkably green, and stock feed unusually good for this time of the year. At Qu'Appelle the snowfall was particularly heavy and the roads very bad; grain not nearly as good a yield as was expected. At Prince Albert the snow had all disappeared by the end of the month, and the roads were in a bad condition. At Swift Current there were falls of snow on three days and rain on five days.

November.—The weather was most exceptionally fine, mild and dry, the amount of sunshine being unusually large, the rainfall in most places light and the mean temperature at some stations as much as twenty degrees above the average. Snow fell in some localities but in most cases it was light, and by the thirtieth the ground was bare again. Garden and wild flowers were in bloom on the last day of the month and the rivers were free of ice. High winds were seldom experienced. Calgary—The grand weather gave the farmers a fine opportunity to finish their fall work, delayed by October storms; ploughing still continued; threshing was in full swing; no ice on rivers; pansies still in bloom in the gardens; cattle very fat; ranchmen anxious to see a little snow to avert danger of prairie fires. Edmonton—The mild, open weather offered opportunity for threshing, which was about one-third finished; the yield very good, sample about average. Swift Current—Bright warm month; rain on four days; one light fall of snow. Medicine Hat—No ice, no snow. Qu'Appelle—Roads good; wheat coming in rapidly.

December.—Calgary—December was remarkable for chinook winds, culminating in the phenomenon of a rainfall for the latter part of the month and the continuation of weather favourable to stock interests. Stock still ranging the hills and plains in as good condition as in summer, although no fodder had been used. A fall of snow proved very valuable to stockmen, as it provided against the danger of prairie fires and supplied moisture for the cattle where the rivers and lakes were frozen. Prince Albert—Roads bad on account of lack of snow.

Following the practice of last year, below will be found tables showing the total annual precipitation, from the year 1883 to date, at various points throughout the North-West Territories. Table II shows the total monthly precipitation during 1899, and Table III contains the maximum and minimum temperatures for each month in the past year, with dates of the latter. I am indebted to the records of the Dominion meteorological service for these data :

TABLE I.—TOTAL ANNUAL PRECIPITATION FROM 1883 TO 1899
INCLUSIVE.

STATION.	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899
Regina	8.16	2.89	3.18	14.93	7.02	2.22	11.47	12.39	9.46	4.88	3.90	9.26	15.19	5.97	* 8.66	14.22	
Medicine Hat.....	12.49	8.02	5.47	8.43	11.98	6.08	7.79	9.70	7.81	9.08	10.00	11.38	11.21	11.77	15.90	21.17	
Edmonton	6.27	11.97	10.50	6.53	9.48	15.88	6.48	19.30	15.63	11.43	12.31	12.07	10.77	9.56	12.16	10.90	20.89
Swift Current.....				7.45	13.88	9.96	6.37	13.01	17.68	12.18	8.68	6.62	9.50	9.62	12.23	15.25	40.40
Qu'Appelle				6.94	11.16	13.47	5.93	18.31	15.31	11.42	11.25	6.63	11.96	15.41	8.76	21.65	19.27
Calgary				7.28	10.15	12.40	5.88	10.70	8.93	5.47	6.88	8.49	10.76	8.68	15.69	* 16.73	27.90
Prince Albert.....				6.44			7.30	12.23	8.77	8.76	6.85	8.17	8.88	13.25	11.01	* 13.35	29.88
Battleford									7.41	10.63	9.24	9.79	10.56	8.65	14.09	14.15	18.96

* 8 months.

† 11 months.

TABLE II.—TOTAL MONTHLY PRECIPITATION 1899.

[illegible]

TABLE III.—TEMPERATURE 1899.

[illegible]

DEPARTMENT OF AGRICULTURE

TABLE III.—Continued.

[illegible]

TABLE III.—Continued.

[illegible]

TABLE III.—Continued.

STATION.	OCTOBER.				NOVEMBER				DECEMBER.			
	Mean	Max	Min.	Date of Min.	Mean	Max.	Min.	Date of Min.	Mean	Max	Min.	Date of Min.
Medicine Hat.....					42.7	67.8	22.0	....	22.0	50.8	—25.0	23
Edmonton.....	35.9	72.0	14.0	14	32.4	55.0	11.0	15	14.4	53.0	—37.0	22
Swift Current....	38.2	82.0	12.3	10	39.8	60.0	20.0	29	16.8	47.3	—15.0	21
Qu'Appelle.....	36.8	76.0	5.2	18	35.5	58.6	18.4	21	8.9	43.0	—24.4	21
Calgary.....	36.7	77.0	4.0	14	37.1	58.0	14.0	12	19.2	56.0	—24.0	22
Prince Albert....	36.6	74.5	15.5	18	30.3	52.5	9.3	30	4.9	48.0	—34.5	20
Battleford.....	36.7	80.0	14.0	14	33.6	55.0	16.0	15	8.4	48.0	—32.0	23
Oonikup.....	36.3	60.0	14.5	27	29.4	52.0	4.0	18	.....	.....	.....	22
Banff.....	35.1	64.4	9.8	14	35.7	52.0	19.7	30	19.9	43.8	—13.4	24
Calgary.....	36.9	76.0	17.5	25	37.1	53.0	13.0	12	19.6	55.0	—22.7	22
Henrietta.....												
Chaplin.....	37.0	72.0	18.0	17	36.2	64.0	17.0	19	13.5	50.0	—12.0	1
Moose Jaw.....	37.0	81.0	9.0	18	35.5	61.0	14.0	1	10.2	43.0	—25.0	22
Regina.....												
Indian Head.....	36.0	77.0	—1.0	18	33.6	58.0	16.0	30	7.4	41.0	—26.0	22
Cannington.....	36.2	72.0	6.0	18	33.4	61.0	10.0	1	.....	.....	.....	.....
Macleod.....	41.4	80.0	2.0	14	42.6	65.0	16.0	30	21.2	50.0	—25.0	22
Yarrow.....	37.5	68.0	2.0	14	.....	.....	.....	.....	.....	.....	.....	.....
Gatesgarth.....	35.9	83.0	5.0	18	35.1	64.0	14.0	1	9.0	45.0	—19.0	8-23
Pincher Creek.....												
Grenfell.....												
Knee Hill.....	36.5	77.0	12.0	14	35.4	61.0	9.0	30	17.9	55.5	—23.0	22
Muscowpetung.....	37.6	76.0	0.0	18	33.4	59.0	12.0	30	7.0	48.0	—30.0	21
Fort Simpson.....												
Alameda.....												
Duck Lake.....	35.7	74.0	17.0	14	31.9	52.7	15.0	17	5.2	42.5	—33.0	23
Red Deer.....	36.2	71.9	13.5	14	37.9	55.9	19.5	30	18.0	50.5	—16.5	22
Tagish.....	25.2	53.0	—5.0	21	.....	.....	.....	.....	.....	.....	.....	.....
Selkirk.....					15.0	48.0	—8.0	11	.....	.....	.....	.....
Mosquito Creek.....	35.6	79.0	—10.0	14	.....	.....	.....	.....	.....	.....	.....	.....
Colles.....												
Saskatoon.....												
Crane Lake.....	38.6	80.0	10.0	14	41.9	63.0	19.0	30	19.1	51.0	—14.0	22
Beaver Hills.....	33.2	75.0	11.0	17	31.0	53.0	11.0	.....	10.3	48.0	—36.0	22

CROP STATISTICS.

Had there been any doubt last year as to the wisdom of inaugurating a system of gathering crop statistics, it would speedily be dispelled by an examination of numerous letters and telegrams on file in the Department from commercial, transportation and manufacturing concerns in the United States and Canada, asking for information of that nature, in many cases with a view to engaging in business or to extending the operations of existing undertakings.

At the last session of the Assembly, a section was added to The Threshers' Lien Ordinance, making it an offence on the part of threshing machine operators to neglect furnishing such information and returns as the Department might require from time to time. This provision was made in order to facilitate the statistical work of the Department. As was pointed out in last year's report, the gathering and compilation of threshing returns, for the purpose of ascertaining the total crop, is practically the only safe method which the Department can adopt at present, owing to the scattered settlement and unorganised condition of a very large portion of the Territories. Estimates of the growing crop must necessarily be based on correct returns of previous years, with the area of the growing crop as a given quantity or closely approximated. Owing to an ever-increasing crop area in sympathy with the large volume of immigration into the country, I do not think satisfactory estimates could be made with less than three or four years' figures and experience as a basis.

The first task which engaged the attention of the Department was to bring the list of threshing machine operators on the books up to date. With that end in view, all the general agents of implement concerns were communicated with, and the names and addresses ascertained of all persons who had purchased machines during the year. The number of threshing machine operators in the Territories this year is 402. About 65 per cent. operate steam outfits and the remainder use horse power. Thirty new threshing machines were brought into the country during the year 1899.

A somewhat different system to that of last year was adopted in obtaining returns for the present season. A small memorandum book was prepared, containing an introductory chapter explaining the value of statistical work to the farmer and the object the Department has in view in compiling it. This was followed by extracts from Territorial Ordinances affecting threshing machine operators, namely, the Ordinance for the prevention of Prairie and Forest fires, The Noxious Weed Ordinance and The Threshers' Lien Ordinance. The body of the book contained spaces for the names of each of the persons for whom threshing was done, the township and range in which he resided, the number of bushels threshed of wheat, oats and barley, with spaces for the number of acres upon which the crops were grown. Spaces were also provided to show the number of acres of breaking and summer fallow ready at the date of threshing, for crop during 1900. In 1898 information was merely asked as to the total number of bushels of wheat, oats and barley threshed, with an estimate of the yield per acre and the percentage of frozen or unsaleable grain handled, from which the area under crop was deduced. Following the practice of last season, a year's subscription to either The Farmer's Advocate or The Nor'-West Farmer was

offered in return for the trouble of furnishing this information. I am pleased to state that, although the attempt to obtain detailed information as to the result of the crop upon every farm in the North-West Territories appeared at first sight rather an ambitious one, the Department met with splendid success, far above antieipations, a larger percentage of returns than last year being secured each containing much fuller and more reliable and useful information.

The memorandum books were mailed to all threshing machine operators with a covering letter on the 15th September. On the 22nd January 291 complete reports had been received, when a further communication was sent to those who had not complied with the requirements, calling their attention to the return. By the 10th February, 1900, 343 reports had been received, leaving only 59 to hear from. A further letter was addressed the delinquents, which brought to hand the remaining reports, with a few exceptions.

It is interesting to note that the final figures in connection with the statistical work of 1898 were not completed until the 25th April of the year following, while the figures for the crop of 1899 were completed on the last day of February and furnished to the press on the 1st March. These calculations entail a very large amount of extra clerical work, which cannot readily be handled by the normal staff of the Department. In the Province of Ontario some ten extra clerks are added to the Department of Agriculture annually to assist, during a portion of the winter, in the statistical branch. Delay in placing this information before the public detracts materially from its value.

The following is a list of crop districts, with the number, name and description of each.

District No. 1. (South-east Assiniboia)—Comprises that portion of the country lying north of the international boundary, south of the southerly limit of Townships 10, west of the westerly boundary of Manitoba and east of the Third Meridian.

District No. 2. (South-west Assiniboia)—Lies west of District No. 1 and east of the easterly boundary of the provisional boundary of Alberta, south of the southerly limit of Townships 10 and north of the international boundary.

District No. 3. (East Central Assiniboia)—Lies west of the westerly boundary of Manitoba, east of the easterly boundary of Range 7 west of the Second Meridian, south of the southerly boundary of Townships 20 and north of District No. 1.

District No. 4. (Central Assiniboia No. 2)—Lies north of District No. 1, west of the westerly boundary of Range 6 west of the Second Meridian, east of the westerly boundary of Range 16 west of the Second Meridian and south of the southerly boundary of Townships 24.

District No. 5. (Central Assiniboia No. 1)—Lies north of District No. 1, west of District No. 4, south of the southerly boundary of Townships 24 and east of the Third Meridian.

District No. 6. (West Central Assiniboia) Lies north of District No. 2, west of District No. 5, east of the easterly boundary of the provisional District of Alberta, and south of the southerly boundary of Townships 24.

District No. 7. (North-east Assiniboia)—This district comprises the country contiguous to the Manitoba & North-Western Railway. It is bounded on the east by the westerly boundary of Manitoba, on the

north by the southerly boundary of the provisional District of Saskatchewan, on the west by the westerly boundary of Range 12 west of the Second Meridian, and on the south by a line commencing at the Manitoba boundary south of Township 20 thence due west to the easterly boundary of Range 7 west of the Second Meridian, thence due north to the south-easterly corner of Township 24 Range 7, thence west to the easterly boundary of Range 13 west of the Second Meridian.

District No. 8. (North Central Assiniboia)—Lies south of the southerly boundary of the provisional District of Saskatchewan, west of District No. 7, east of District No. 9, and north of the northerly boundary of Townships 23.

District No. 9. (North-west Assiniboia)—Lies south of the southerly boundary of the provisional District of Saskatchewan, west of Range 9 west of the Third Meridian, north of District No. 6 and east of the provisional District of Alberta.

District No. 10. (East Saskatchewan)—Being that portion of the provisional District of Saskatchewan lying east of the easterly boundary of Range 10 west of Third Meridian.

District No. 11. (West Saskatchewan)—Being all that portion of the provisional District of Saskatchewan lying west of District No. 10.

District No. 12. (North Alberta)—Being all that portion of the provisional District of Alberta lying north of the northerly boundary of Townships 44.

District No. 13. (North Central Alberta)—Lying between and including Townships 44 and 37.

District No. 14. (Central Alberta)—Lying between Townships 36 and 29 inclusive.

District No. 15. (South Central Alberta) Lying between Townships 20 and 28 inclusive.

District No. 16. (South Alberta)—Being all that portion of the provisional District of Alberta lying north of the international boundary and south of the southerly limit of Townships 20.

The total acreage under crop in wheat, oats and barley in South-east Assiniboia during the year was 99,187. The number of farms was 1,087, which would give an average area under crop of 91 acres. Very incomplete returns were received in respect to the area ready for the 1900 crop. Some 11,000 acres of new breaking was, however, reported. A great number of complaints were received from the Carnduff district of bad stacking, which resulted in serious damage. Some losses were reported at Winlaw from hail, where a small area was also destroyed by prairie fire. A commencement has been made in this district in growing flax.

South-western Assiniboia is largely unoccupied. Some farming is, however, done in the Josephsburg district. Reports were only received from eight farms with a total area under crop of 193 acres, being an average area per farm of 24 acres.

East Central Assiniboia, lying between Fleming and Grenfell, contained a total area under crop of 85,041 acres, which was divided into 1,413 farms, containing an average area of 60 acres per farm. Some 12,000 acres of new breaking were reported and 23,000 acres of summer fallowing. Judging by the returns there does not appear to have been a very large percentage of frozen grain in this district. About 1,000 bushels of rye were raised on an area of 78 acres.

Central Assiniboia (No. 2) situated between Grenfell and Balgonie, is the most important crop district in the Territories; 125,743 acres were under crop during the year, upon 1,423 farms. The average crop area of each farm is 88 acres. Some 11,500 acres of new breaking were reported, but the returns in this respect were rather incomplete. Quite serious loss was sustained in some portions of this district by hail, and July and August frosts. In the portion lying north of Grenfell the loss was reported at 20 per cent. The total yield for the whole district was materially reduced by the farmers cutting their grain on the green side; a great deal of damage was also reported through bad stacking. From 72 acres 1,329 bushels of rye were threshed in this district, as well as about 5,000 bushels of brome grass seed. The somewhat small yield of wheat per acre is attributed to severe frosts, during the growing season, in some portions of the district.

Central Assiniboia (No. 1) which covers the country between Balgonie and Caron contained a total area under crop of 65,626 acres, divided amongst 752 farms, with an average acreage of 87. A somewhat incomplete return places the area of new breaking at 12,000 acres. The consensus of opinion amongst threshers seems to indicate that 18 per cent. of the wheat was injured by frost. About 1,000 bushels of rye were produced.

West Central Assiniboia is largely devoted to stock raising and the area under cultivation is extremely small, aggregating only 457 acres.

North-east Assiniboia contains an area under crop of 19,266 acres. The number of farms was 482, containing an average crop area of 39 acres. About 3,000 acres of new breaking were reported and a somewhat smaller area of summerfallowing. From 90 acres 1,524 bushels of rye were threshed in this district, as well as a small quantity of brome grass seed. The rather small yield per acre was caused by severe frosts in some portions of the district.

North Central Assiniboia is devoted to stock raising and no returns have, therefore, been received in this department. The district of North-west Assiniboia is almost entirely unsettled.

The area threshed in the East Saskatchewan district was somewhat smaller than in 1898, aggregating only 23,121 acres, contained within 515 farms, of an average crop area of 45 acres. No doubt the phenomenally large rainfall during the growing season destroyed a large portion of the crop, which consequently did not pass through the threshers' hands, and of which no record could be obtained by the Department. Very severe damage was caused by frost.

The amount of damage done in West Saskatchewan was even greater than that of the last named district. A large portion of the crop was not threshed and the threshing machine operators report that a large percentage of the wheat was injured by frost.

The total area threshed in the district of Northern Alberta was 64,966 acres, the number of farms was 1,622, with an average area under crop of 40 acres. Some 1,100 acres of new breaking are reported, but the returns are not complete. The threshing machine operators place the frozen grain at 34 per cent. of the total crop and some damage was also reported from hail. Northern Alberta is rapidly developing into the greatest oat producing district in the Territories; over one-third of the oat crop being raised there. It is also worthy of mention that over 130,000 bushels of rye are estimated by some threshers to have been

grown in this district during the year. No authentic returns to that effect have, however, been obtained by the Department.

North Central Alberta furnished a crop of 6,180 acres during the year. The number of farms is reported at 236, with an average area under crop of 26 acres. The area of new breaking is estimated to exceed a thousand acres.

The total area threshed in Central Alberta was 3,632 acres divided amongst 154 farms, with an average area of 23 acres. A very large portion of the crop was reported frozen. The exceedingly wet summer rendered it necessary to cut a large area of crop green, which probably accounts for the apparently small acreage returned.

Some 7,530 acres of crop were threshed in South Central Alberta, which comprises the Calgary district. The number of farms is reported at 294, with an average area of 25 acres. About 600 acres of new breaking are estimated as being ready for crop during 1900. About 6,000 bushels of rye were produced in this district.

The total area threshed in Southern Alberta was 10,649 acres, and the number of farms is 296, each containing an average area of 36 acres; 800 acres of new breaking are reported. The threshing machine operators are of opinion that a great deal of the wheat crop of this district was injured by frost. The Mormon colony at Cardston is included in this district, which accounts for a rather large cultivated area considering the fact that Southern Alberta is popularly supposed to be devoted exclusively to ranching operations.

The total number of farms in the North-West Territories is reported at 8,346, each containing an average area under crop of 61 acres. A tabulated statement showing the results of the returns from the various districts, as well as a schedule showing an estimate covering the returns not yet to hand, with a recapitulation of the whole and a comparative statement of the crops of 1898 and 1899, are submitted. It would be well, however, to make it perfectly clear that the returns alluded to only deal with the quantity of grain threshed, and the actual area of land upon which it was grown. In many portions of the Territories, particularly in the provisional Districts of Saskatchewan and Alberta, large areas of grain were never threshed owing to excessive moisture, frost or hail. These areas are not, of course, taken into account in the departmental compilations and would materially decrease the apparent yield per acre, as calculated on the basis of the threshers' returns.

I.—CROP STATISTICS OF 1900.

Compiled from returns furnished under The Ordinance respecting
Threshers' Liens.

A—WHEAT.

DIS- TRICT NO.	BUSHELS.		TOTAL	ACREAGE.		TOTAL
	RETURNS	ESTIMATE.		RETURNS	ESTIMATE.	
1	1,151,043	109,716	1,261,759	73,299	6,980	80,279
2	75	.....	35	3	.....	3
3	1,004,720	75,064	1,079,784	60,932	4,540	65,472
4	1,968,666	.....	1,968,666	124,949	.....	104,949
5	1,275,969	85,064	1,331,033	47,869	3,188	51,057
6	1,255	.....	1,255	32	.....	32
7	139,285	25,324	164,609	8,965	1,630	10,595
8	No returns	.....	.....	.....	.....	.....
9	No returns	.....	.....	.....	.....	.....
10	192,949	45,940	238,849	12,632	3,000	15,632
11	7,518	.....	7,518	440	.....	440
12	555,270	135,372	690,642	22,192	5,412	27,604
13	30,647	.....	30,647	1,608	.....	1,608
14	8,338	.....	8,338	471	.....	471
15	36,231	.....	36,231	1,707	.....	1,707
16	66,257	.....	66,257	3,674	.....	3,674
Terr.	6,439,183	476,480	6,915,663	338,773	24,750	363,523

B. OATS.

DIS- TRICT NO.	BUSHELS.		TOTAL	ACREAGE.		TOTAL
	RETURN.	ESTIMATE.		RETURN.	ESTIMATE.	
1	464,876	44,272	509,148	15,269	1,452	16,721
2	9,086	.....	9,086	190	.....	190
3	438,204	32,624	470,828	16,671	1,240	17,911
4	595,496	.....	595,496	19,938	.....	19,938
5	459,369	30,624	489,993	13,051	870	13,921
6	19,785	.....	19,785	378	.....	378
7	208,927	37,986	246,913	7,022	1,276	8,298
8	No returns	.....	.....	.....	.....	.....
9	No returns	.....	.....	.....	.....	.....
10	132,887	31,640	164,527	4,565	1,090	5,655
11	12,472	.....	12,472	453	.....	453
12	1,132,772	274,092	1,406,864	26,418	6,384	32,802
13	163,450	.....	163,450	3,804	.....	3,804
14	126,822	.....	126,822	2,855	.....	2,855
15	215,006	.....	215,006	5,288	.....	5,288
16	255,646	.....	255,646	6,724	.....	6,724
Terr.	4,234,798	451,238	4,686,036	122,626	12,312	134,938

C—BARLEY.

DIS- TRICT NO.	BUSHEL.		TOTAL.	ACREAGE.		TOTAL.
	RETURN.	ESTIMATE.		RETURN.	ESTIMATE.	
1	40,801	3,884	44,685	1,999	188	2,187
2						
3	31,295	2,460	33,755	1,538	120	1,658
4	19,866		19,866	856		856
5	12,959	863	13,822	608	40	648
6	2,104		2,104	47		47
7	6,464	1,176	7,640	315	58	373
8	No returns					
9	No returns					
10	30,319	7,220	37,539	1,484	350	1,834
11	1,193		1,193	53		53
12	96,125	24,264	120,389	3,636	924	4,560
13	23,876		23,876	768		768
14	7,202		7,202	306		306
15	14,485		14,485	535		535
16	10,865		10,865	451		451
Terr.	297,554	39,867	337,421	12,596	1,680	14,276

II.—Comparative Statement of Crops 1898 and 1899.

A—WHEAT.

DIS- TRICT NO.	BUSHEL.		ACREAGE.		YIELD PER ACRE	
	1898.	1899.	1898.	1899.	1898.	1899.
1	727,954	1,261,759	48,530	80,279	15.50	15.71
2	46,210	35	1,925	3	24.00	11.66
3	1,142,119	1,079,784	71,372	65,472	16.20	16.78
4	1,460,317	1,938,666	80,348	104,949	18.00	18.75
5	900,934	1,361,023	42,859	51,057	21.03	26.65
6	590	1,255	28	32	18.75	39.20
7	175,328	161,609	13,487	10,595	13.27	15.53
8	No returns					
9	No returns					
10	283,925	238,819	17,602	15,632	17.65	15.27
11	14,049	7,518	702	440	20.33	17.08
12	627,201	690,642	24,122	27,604	26.10	25.02
13	27,432	30,647	1,246	1,608	22.25	19.05
14	14,896	8,338	572	471	26.00	17.70
15	74,905	36,231	3,404	1,707	22.18	21.30
16	47,608	66,257	1,983	3,674	24.00	18.03
Terr.	5,512,478	6,915,663	307,580	363,523		

DEPARTMENT OF AGRICULTURE

B—OATS.

DIS- TRICT NO.	BUSHEL.		ACREAGE.		YIELD PER ACRE	
	1898.	1899.	1898.	1899.	1898.	1899.
1	276,219	509,148	14,384	16,721	19.61	30.44
2	17,840	9,086	482	190	37.50	47.82
3	237,118	470,828	8,469	17,911	28.28	26.28
4	379,249	595,496	14,558	19,938	25.72	29.86
5	278,761	489,993	11,614	13,921	24.20	35.19
6	8,000	19,785	160	378	51.75	52.03
7	248,868	246,913	9,218	8,298	27.00	29.75
8	No returns					
9	No returns					
10	127,205	164,527	6,840	5,655	18.69	29.10
11	16,152	12,472	538	453	30.66	27.53
12	1,115,358	1,406,864	24,246	32,802	46.53	42.87
13	134,853	163,450	3,290	3,804	41.25	42.96
14	130,204	126,822	2,830	2,855	46.50	44.42
15	182,226	215,006	4,799	5,288	37.41	40.78
16	164,206	255,646	3,649	6,724	45.00	38.01
Terr.	3,316,259	4,686,036	105,077	134,938		

C—BARLEY.

DIS- TRICT NO.	BUSHEL.		ACREAGE.		YIELD PER ACRE	
	1898	1899	1898	1899	1898	1899
1	45,518	44,685	1,882	2,187	23.77	20.41
2	200		10		20.00	
3	37,462	33,755	1,629	1,658	23.33	20.34
4	23,597	19,866	1,204	856	19.60	23.20
5	14,360	13,822	756	648	19.03	21.31
6	1,550	2,104	42	47	38.33	44.82
7	8,454	7,640	496	373	17.20	20.52
8	No returns					
9	No returns					
10	49,802	37,539	2,275	1,834	22.00	21.10
11	1,915	1,193	87	53	22.00	22.50
12	213,103	120,389	6,551	4,560	31.02	26.46
13	17,268	23,876	617	768	28.75	31.08
14	15,603	7,202	447	306	34.83	23.53
15	16,928	14,485	604	535	28.00	27.41
16	15,752	10,865	492	451	32.00	24.09
Terr.	449,512	337,421	17,092	14,276		

III—RECAPITULATION.

CROP	BUSHEL.		ACREAGE.		YIELD PER ACRE	
	1898.	1899.	1898.	1899.	1898.	1899.
Wheat	5,542,478	6,915,663	307,580	363,523	18.01	19.02
Oats	3,040,307	4,686,036	105,077	134,938	28.93	34.72
Barley	449,512	337,421	17,092	14,276	26.29	23.63
			429,729	512,737		

AGRICULTURAL EXPERIMENTS.

An appropriation was made in last year's estimates for conducting experimental agricultural work in the Territories in accordance with the policy on the subject outlined by you. As indicated in last year's report the most important field awaiting agricultural research is undoubtedly that portion of the Territories designated the "semi-arid district," where, owing to the deficient rainfall, irrigation is necessary to successfully mature crops. While agricultural experimental work under humid conditions is carried on by the Dominion Government at the Indian Head experimental farm and at various other points in the eastern provinces and British Columbia, agricultural experiments under artificial watering is a line of work not hitherto touched in Canada.

When it is considered, that, according to the latest estimate of the Canadian irrigation surveys, an area of 64,857,000 acres, exceeding one-third of the total extent of the North-West Territories, is classified as "semi-arid," it will readily be understood that irrigation must, of necessity, play a very prominent part in the ultimate development of this enormous tract of land. When it is further taken into consideration that some 409 miles of irrigation ditches are at present in operation, having involved a capital outlay on the part of settlers and others of \$257,000 and that a company is now actually engaged upon the construction of an irrigation system in the Lethbridge district, at a probable cost of \$500,000 it will be conceded that it is high time steps were taken to initiate experimental work having in view the determination of all the intricate problems with which the irrigator at present finds himself face to face.

A lease for a sufficient area of land upon which to conduct agricultural experiments under irrigation was entered into between the Government and the Calgary Irrigation Company and Mr. P. T. Bone, C.E., the manager of the Calgary Irrigation Company, was selected to take charge of the experiments to be conducted at the experiment station at Calgary. The following is the body of an agreement between Mr. Bone and the Government :

AGREEMENT.

WHEREAS it is the intention of the Government of the said Territories to establish an agricultural experimental station on part of Section number Twenty-one (21) Township number Twenty-three (23) Range number One (1) West of the Fifth Meridian in the said Territories, and the party of the first part has agreed with Her Majesty to manage and superintend the said experimental station on the terms and conditions hereinafter set out.

NOW THEREFORE these presents witness that the party of the first part, for the consideration herein set out, covenants, promises and agrees to and with Her Majesty, Her Successors and Assigns, as follows :

1. That he, the party of the first part, will for and during the term of five years to be computed from the First day of January, A.D. 1899, properly, efficiently and in a thorough manner institute, operate, manage and superintend the said experimental station, observing always such instructions and directions as may from time to time be given by the Department of Agriculture of the said Territories.

2. That the party of the first part will furnish all the team and hand work and superintendence necessary in the working, irrigation and management of the said experimental station ; Provided that the total area to be sown in grain or root crops (not including grass or trees) in any one year shall not exceed thirty-five acres.

3. That the party of the first part will furnish for the use of the said experimental station all the implements necessary for the operation of said farm of makes and styles to be approved by the said Department, which implements are to include the following, that is to say :—Plough, harrow, cultivator, seed drill, roller, fanning mill, set of platform scales, waggon, self binder, mower, rake, broadcast hand seeder, threshing outfit,

and all the necessary small tools and other implements required in the ordinary operation of farming.

4. That the party of the first part will promptly prepare and transmit all reports, returns and bulletins that may from time to time be required by the said Department.

5. And generally that he, the said party of the first part will at all times conduct the said experimental station as a public experimental farm, including the work of careful and economical distribution among such of the public as may apply therefor, of such seeds, roots and agricultural products as are usually distributed from an experimental farm, and including such correspondence as may be commenced by settlers and proposed settlers on matters pertaining to experimental agriculture as carried on at said experimental station.

IN CONSIDERATION WHEREOF and on condition of the fulfillment of the the terms hereof by the party of the first part, Her Majesty will pay to the party of the first part for the first year of said term the sum of Three Hundred and fifteen dollars payable one half thereof forthwith and the balance on the first day of September 1899, and for each year thereafter the sum of Six hundred and thirty dollars, to be paid in equal monthly instalments at the end of each month, and in addition to said sums the party of the first part is to be entitled to such of the hay, straw, roots and garden stuff (apart from potatoes) raised on said station in each year as may not be required for the purpose of said experimental station and also to an allowance of five cents on every bushel of grain raised on said station.

Provided always that this agreement and the hiring hereunder shall be determinable at any time by the Commissioner of Agriculture for the said Territories giving six months' notice of such determination to the party of the first part.

The land included in the experimental station at Calgary has been worked for a considerable number of years and is typical of the irrigated lands in the district. Necessarily the work during the past year has been largely of a preparatory nature. Below will be found the report of Mr. Bone upon the operations of the year 1899.

Report of P. T. Bone, C.E., in charge of Calgary Experimental Station.

"I have the honour to submit herewith report of the work commenced on the Calgary experimental station during the past season.

"The land, to begin with, was practically all in oat stubble and the principal work has been summer fallowing and preparing for next season's experiments. Forty acres were thus dealt with.

"The remaining portion of the station was set apart for the following experiments:—

"1. To ascertain the practicability of seeding down stubble to timothy and bromus without ploughing.

"2. To kill sweet-grass (locally known as "couch" or "twitch" grass) by ploughing under and immediately sowing a quick growing smothering crop.

"For the first of these experiments five acres were chosen for each variety. The land was lightly disc harrowed on the twenty-sixth May, the grass seed immediately sown broadcast, followed by rolling the land. By this method the stubble was destroyed only to a very small extent and remained as a protection to the soil from the high winds which usually prevail at that time of the year. One half of the timothy plot was seeded with six pounds and the other half with twelve pounds per acre. Grass and weeds grew together and, during July, the weeds, which were principally annuals, were mowed down before seeding and allowed to lie on the ground as a mulch. A very fair catch of timothy has been obtained but the bromus has not shown up well so far.

"For the second experiment, ten acres, on the southern side of the station where sweet grass had obtained a considerable hold, were ploughed on the thirtieth of June and first of July, when the grass was in flower and about at its weakest stage. The depth of ploughing was from five to six

inches. The land was harrowed to a good seed bed and on the third of July rye was sown by press drill on five acres and on the fifth of July barley was put in on the other five acres. The seed plots germinated quickly but the barley as it came up was badly eaten by gophers and the grass continued to grow on the patches thus eaten down. The rye, however, was untouched and grew with vigour.

"Up to the beginning of August the weather was dry and the weeds, where the rye was put in, seemed to be smothered out. August, however, was a month of exceptional rain and during this month the sweet grass again made its appearance in places. Whether it can be entirely killed by this method, under the dry climatic conditions which usually prevail, has yet to be determined. On the twenty-fifth of September eleven loads of rye were cut green, and on the thirtieth seven loads of barley.

"The heavy rainfall in August and in the first week of September—seventeen wet days during that period—greatly hindered the work of cultivation on the summerfallow and encouraged the spreading of sweet grass in patches throughout it. A knowledge of the proper method of dealing with this pest is most important and experiments towards that end are essential.

"The weather conditions of the season have been unusual. As already noted the haying and harvest time was extremely wet and these operations were carried out in the district under great disadvantages. The latter half of September and beginning of October proved fine and enabled harvest operations to make good progress. These were again stopped for a time by a snowstorm which started on the tenth of October and lasted three days. This storm was followed on the thirteenth by a night of very hard frost. The weather was wintrylike for several days but turned mild and continued so during November and December, which proved a great boon to farmers and stockmen."

Considerable attention has been devoted during the year to outlining a plan of experiments to be initiated during the coming season. Valuable assistance has been received from Professor Shaw, of the Montana agricultural experimental station, which is largely under irrigation and also from Dr. Saunders, the director of experimental farms, as well as from Mr. Angus Mackay, superintendent of the experimental farm at Indian Head. The following is a copy of the instructions for the guidance of Mr. Bone in carrying on the work of the experiment station during the coming season. It will readily be understood that it may be necessary to somewhat modify these instructions before the season opens, particularly when it is taken into consideration that the present year's instructions contemplate a line of experiments which will cover a large number of years and that it is of the greatest importance to give precedence to investigations promising the quickest solution consistent with the practical value of the results. Such a multitude of problems await attention that it is a matter of considerable difficulty to make the best possible selection.

Instructions given to P. T. Bone, C.E., in connection with the Experimental Station at Calgary.

With reference to the programme for the coming season of agricultural experiments at Calgary I beg to inform you that it has been decided to set apart an area of fifteen acres in the north-westerly corner of the station, for a series of experiments, in the following manner.

Fourteen test plots, one hundred feet in width by four hundred and thirty-five and

six-tenths feet in length, occupying an area of one acre each, are to be located in two tiers of seven each, from east to west with a distance of ten feet between plots. A blue print of a plan has been furnished you, fully setting forth the details of the division. The experiments will cover the following ground:

Wheat.—The most important work to be undertaken in regard to this cereal is doubtless the testing of varieties and the proper application of water.

Plot 3. The seed to be used on this plot will be Red Fyfe. It should be drilled, two inches deep, at the rate of one-and-a-half bushels to the acre.

Plot 4. This area is to be subjected to the same treatment as plot 3, but seeded with Preston. This variety is a cross of Red Fyfe on Ladoga, which has averaged four days earlier in ripening than Red Fyfe and has given almost as heavy a yield. It appears to be as good in quality as Red Fyfe.

Plot 5. The same method of cultivation should be adopted with respect to this plot, but the variety of wheat to be seeded is Harold. This wheat has averaged on the Dominion experimental farms about twelve days earlier than Red Fyfe. It is, in fact, the earliest variety of wheat that has been tested. While, however, it possesses the great advantage of early maturity, it does not compare favourably with either the Preston or the Red Fyfe in point of yield. It is possible that a sufficient quantity of this variety cannot be obtained, if so, another variety will be substituted.

The three above mentioned plots having been seeded with different varieties of wheat, but otherwise presenting exactly the same conditions, should be divided into two equal parts, for the purpose of conducting investigation as to the most satisfactory number of irrigations or propitious periods of the season for artificial watering. It would of course be idle to outline any definite, detailed plan of action as regards the irrigation of each plot or subplot during the growing season. Everything will necessarily depend upon the precipitation and evaporation conditions; so that special treatment in this respect will have to be determined from time to time.

After having established to a reasonable certainty, through a series of experiments covering several seasons, the most successful variety of wheat and manner of irrigating it, experiments might be conducted with a view to ascertaining the best methods of cultivation, quantity of seed to be used per acre and various other problems in connection with the raising of wheat under irrigation in the semi-arid district. These investigations would necessarily extend over a large number of years.

Oats.—The profitable production of this cereal presents the same problems as were referred to in connection with wheat and an additional one, namely, the determination of the proper time for seeding. While every good farmer admits that to ensure the greatest success in wheat raising the grain should be put in as soon as the ground can be worked in the spring, the question as to the most advantageous date for the seeding of oats remains a debatable point. The experiments in connection with the raising of oats will, therefore, include the determination of the proper variety, method of irrigation and time of seeding.

Plot 10. The north half of this plot is to be seeded as early in the spring as possible with Banner oats, drilled two inches deep, at the rate of two and-a-half bushels per acre. The same treatment is to be given the south half of the plot, with the difference that the seeding is to be done not earlier than the fourth day of May.

Plot 11. This plot is to be subjected to exactly the same treatment as Plot 10, but the seed to be used will be Improved Ligowo.

Plot 12. The same treatment as Plot 10, using as seed Bonanza.

The experiments in connection with the artificial watering of the plots devoted to oats will be along the same lines as explained under wheat. It stands to reason, in view of the plots being divided into northerly and southerly subplots for the purpose of determining the relative benefits or objections to early sowing or late sowing, the division for the purpose of conducting irrigation investigations, must be into easterly and westerly subplots.

Barley.—The experiment with regard to barley should assume more or less the same form as those in connection with wheat and oats. Instead of testing three varieties, however, in view of the excellent market for brewing barley and the high value of this cereal for stock feeding, four varieties could be advantageously tried.

Plot 1. The north half of the plot is to be seeded with French Chevalier, drilled two inches deep, at the rate of two bushels per acre, before the fourth of May, the south half subjected to the same treatment, but seeded on or about the twenty-fifth May.

Plot 2. The same treatment as Plot 1. The seed to be used is Canadian Thorpe.

Plot 8. This plot should be subjected to exactly the same treatment as Plots 1 and 2. The Department is now in communication with the experiment station of the agricultural college of Bozeman, Montana, in order to ascertain particulars as to the most successful varieties of brewing barleys grown under irrigation in that State. Gallatin Valley (Montana) barley is much sought after for malting purposes. It is hoped that a suitable seed will be obtained shortly.

Plot 9. This plot is to be treated exactly like Plot 8 and will be devoted to testing a second variety of Montana-grown barley.

The remarks in connection with the irrigation of the oat plots, apply with equal force to barley.

Pease.—This is a crop, comparatively speaking, unknown in Alberta, and there is every reason to believe that it can be successfully and profitably grown. As is well known, pease is the most valuable feed for finishing off hogs and no efforts should be spared to demonstrate the practicability of producing the same under irrigation.

Plot 6 (subplot *a*). The north half of this plot is to be seeded with a variety of pease yet to be determined, as early as possible in the spring.

Plot 6 (subplot *c*). The same treatment is to be given the south half of this plot, which, however, will be devoted to testing a second variety.

Alfalfa.—A series of carefully planned experiments should be carried out with a view to ascertaining whether this "king of forage plants" can be successfully grown under irrigation in the semi-arid portions of the North-West Territories. The experience in other countries has been that alfalfa thrives best in a warm friable soil, overlying a loose and porous sub-soil. It would appear that the south westerly portions of the Territories present ideal conditions for the successful growth of this plant as far as soil is concerned, and there is no apparent reason, from a climatic standpoint, why alfalfa should not thrive.

The high value of alfalfa as a forage plant is undisputed. Its chief value for this country, however, would not be as a hay-producing but as a pasture plant. Abundant evidence from every portion of the globe is on record, as to the feasibility of profitably growing pork on a large scale with the aid of alfalfa pasture combined with a very insignificant grain ration. The salvation of the pork industry in this country, must necessarily be the extensive grazing of hogs.

Considerable pains have been taken to ascertain the results of previous experiments with regard to the growing of alfalfa in various portions of the North-West Territories as well as in the State of Montana. In the early history of the Indian Head experimental farm alfalfa was tried and proved a failure. Mr. Angus Mackay, the superintendent, who had charge of the experiments is, however, of the opinion that no final conclusions could be based on those trials. In the Pincher Creek district the plant met with a similar fate, although the experimenter does not consider that it was accorded a fair trial. In the Cardston district, the result likewise was of a negative nature. In the vicinity of Maple Creek, alfalfa has been grown for some years with considerable success, while experiments conducted in the Battleford district were successful as far as they went. Both farms upon which this plant was tried in the latter locality were afterwards deserted, but the patches are still favourite feeding resorts for cattle ranging in the vicinity, and the opinion is expressed that if these plots were fenced a considerable growth of alfalfa would doubtless appear. A number of experiments have been made in recent years in the vicinity of Calgary. In one or two cases the result was a distinct failure, which, however, might be attributed to the proximity of the water level in the soil to the surface and the deep penetrating taproot of the plant, the experiments having been conducted on bottom lands. One experiment on bottom lands has, however, been fairly successful. As far as is known, only one experiment has been made on exposed well drained bench lands in Central Alberta, where the plant has produced a satisfactory crop for the last two years and has survived two winters without any artificial protection whatever.

In the state of Montana, alfalfa has proved an unqualified success, and this leads to the belief that the same results can be attained under irrigation in the Territories. The altitude and general climatic and soil conditions of points in Montana, where this plant, is successfully grown, compare closely with those prevailing, for instance at Calgary and the result of the experiments in Montana is, therefore, full of encouragement. Alfalfa, being a leguminous plant, would, of course, be invaluable as a soil-restorer upon our light lands, but would not fit into a short rotation as well as the clovers.

The problems to be solved in connection with the growing of alfalfa are, briefly speaking, the following:

- (1). Can alfalfa be profitably grown in the North-West Territories?
- (2). How should it be seeded? With or without a nurse crop?
- (3). Should the ground be irrigated before seeding?
- (4). How many pounds of seed should be used per acre, with and without a nurse crop?
- (5). Can any means within the scope of practical farming operations be adopted to prevent winter killing?
- (6). To what extent, and at what stages, should alfalfa be irrigated under the conditions prevailing in the semi-arid portions of the Territories?

A very large area of land would, of course, be necessary to carry on simultaneously a complete series of investigations to determine all the problems enumerated above. As only two acres are available for the present, which could be devoted to alfalfa ex-

periments, our efforts will be confined to determining whether alfalfa is a feasible crop, whether it will successfully stand our winters, whether it should be sown with or without a nurse crop, and to ascertain its proper treatment with respect to irrigation.

Plot 13. The whole plot is to be seeded with alfalfa broadcasted as early in the spring as possible, at the rate of eighteen pounds per acre. Immediately after seeding follow with a light harrowing. During the growing season the weeds and young plants should be cut as often as necessary, with the sickle bar of the mower set as high as possible. The last cutting should be made in September, just before the occurrence of the annual severe frosts. The south half of the plot should then be raked clean, while the mulch formed by this cutting should be left as a protection on the north half of the said plot.

Plot 14. Oats are to be drilled in on this plot at the rate of one and a quarter bushels per acre as early in the season as possible. Immediately afterwards eighteen pounds of alfalfa seed to the acre is to be broadcasted and lightly harrowed in.

Both plots are to be divided in the centre so as to form easterly and westerly halves for the purpose of carrying on two distinct experiments in connection with the application of water.

Rape.—It is very desirable that this annual forage plant should be brought to the attention of the farmers in the semi-arid portion of the Territories as furnishing excellent pasturage for the grazing of hogs.

Plot 7 (subplot a). The north half of the north half of this plot is to be seeded with rape, broadcasted at the rate of four and a half pounds per acre and harrowed in.

Plot 7 (subplot b). Upon the south half of the north half of this plot, rape to be drilled in in rows twenty inches apart and kept cultivated during the season.

Experiments as to the proper method of irrigation are to be carried on upon a similar basis to that outlined under alfalfa.

Plot 7 (subplot c). Four varieties of potatoes are to be tested on this subplot, and it is also to be devoted to demonstration tests of mangolds, turnips, sugar beets, parsnips, carrots and other vegetables under irrigation, the particular varieties to be tested will be decided upon at a later date.

Eradication of sweet grass.—This weed has proven one of the most formidable pests in almost every portion of the district of Alberta and was particularly troublesome last year on account of the abnormally wet season. That portion of the experiment station upon which sweet grass has made its appearance is to be divided into four different plots for the purpose of initiating a series of systematic experiments having in view the eradication of this weed.

Experiment No. 1. Plough deep late in July, harrow well. Keep the surface well harrowed until the first of August, when the plot is to be seeded with fall wheat obtained from the Pincher Creek district at the rate of one and a half bushels per acre.

Experiment No. 2. This plot is to be treated exactly as outlined above, but the fall wheat is to be sown on the fifteenth of August.

Experiment No. 3. Plow the land as soon after the formation of the seed of the sweet grass as possible, but before ripening. As soon as the surface settles sow thickly with barley, rye and oats respectively upon three different subplots. Immediately after the crop is off, fall plough as deep as possible and plough again the following spring before putting in another crop.

Experiment No. 4. The plot is to be ploughed about the middle of June, backset two weeks later and then seeded down to *bromus inermis* at the rate of fourteen pounds to the acre.

IRRIGATION EXPERIMENTS WITH BROMUS AND TIMOTHY. The two plots, *bromus inermis* and timothy, which were seeded down on the eastern portion of the experiment station, are to be divided up into smaller plots for the purpose of conducting investigations regarding the proper application of water. The general plan of this experiment, will, as before stated, necessarily depend more or less on the season, and details had, therefore, better be arranged at a later date.

As it is of the greatest importance that data in connection with the precipitation, evaporation and temperature conditions should be obtained upon the station in order to appreciate fully the value of any conclusions arrived at with respect to the irrigation investigations outlined, the Meteorological Department was approached in order to obtain the necessary instruments. The director, Mr. Stupart, upon taking the matter into consideration, admitted the importance of this work and agreed to supply a maximum and minimum thermometer as well as a rain-gauge and evaporating pan and gauge. You will no doubt receive these instruments in the course of a short time with full instructions for setting them up and directions for taking the regular readings, which should be forwarded to this Department for record and transmission to the director of the meteorological service at Toronto.

NOXIOUS WEEDS

I am pleased to be able to report that the campaign against noxious weeds in the Territories was conducted upon a more satisfactory basis this year than last. The experience gained in administering this Ordinance during the season of 1898, brought out a number of imperfections in the existing law. At the last session of the Legislative Assembly, a new Ordinance was submitted in which an attempt was made to correct the faults of the old legislation on the subject. It was found that the nomenclature of Section 1 of the old Ordinance was faulty and, upon the advice of Professor Fletcher, certain changes were suggested. It is very important that every weed should be known by its proper name. The main addition made was the furnishing of machinery whereby the expenditure upon abandoned lands within organized districts became a charge against such lands in the same manner as local improvement district taxes. The result of this provision was that only a very small amount of public funds was expended upon the eradication of weeds where the land could not be held responsible for the amount of the said expenditure. Some doubt also existed as to the precise definition of the term "dispose of" in connection with the provision of the law dealing with the sale of elevator screenings. An attempt was made in the new Ordinance to make the intention of the law absolutely clear.

In the light of the present year's experience, it would seem desirable that further amendments should be made to the Ordinance. The wish has been expressed by many that blue barr should be placed on the list of noxious weeds, and it would probably also be advisable to include cow cockle and corn cockle. These are all introduced weeds and are becoming unduly plentiful in our crops. It may be mentioned that cockle seed possesses poisonous properties. It would also be well if the term French weed were eliminated from Section 1 and the proper name of the weed, namely, stink weed, inserted in its place. This change would be in keeping with the departmental bulletin and lectures which have been, and will be, delivered under Government auspices on the subject of noxious weeds. Considerable difficulty has also been experienced during the past season in connection with the spread of noxious weeds from the screenings left after threshing. It would be advisable that the words "and screenings" be inserted after "straw" in subsection *b* of Section 9 of the Ordinance.

The number of noxious weed inspectors was increased from eleven to twenty in order to provide for a more efficient inspection of that portion of the Territories seriously infested with noxious weeds.

During the season of 1898 it became apparent that provision had to be made for the appointment of an official to supervise the field work of the local inspectors. In order to exercise intelligent control over the work of these men, it is an absolute necessity that their reports should be rendered to the Department regularly and in a uniform manner. It is also of the utmost importance that the Department should be in a position to obtain, from time to time, reports as to the manner in which the inspectors are performing their field work. One has only to study the provisions of the Ordinance to realise the very large powers vested in noxious weed inspectors, and it is evident that the very closest supervision should be exercised in order to guard against abuse of those powers. Numerous instances are on record where direct charges have been made to the effect that inspectors were influenced by personal motives in dealing with a number of cases

in their official capacity. Arrangements were, therefore, made to appoint Mr. T. N. Willing, of Olds, to the position of Territorial inspector of noxious weeds. Mr. Willing was highly recommended by Professor Fletcher and others as an expert botanist and a thoroughly practical farmer. He entered upon his duties on the fifteenth May, and, as anticipated, his work proved of the greatest possible value in dealing intelligently with the local inspectors whom he visited at frequent intervals while engaged upon field work, and it is safe to say that last year the Ordinance was observed as it never had been before.

I am also pleased to be able to report that, with one exception, the local inspectors performed their work in a very businesslike and intelligent manner. They were all instructed personally by the Territorial inspector how to prepare their periodical reports to the department and the manner in which it was intended to carry out the provisions of the law.

An understanding was entered into during the month of June with the land department of the Canadian Pacific Railway Company whereby that company agreed to defray any reasonable expenditure rendered necessary for cutting, raking and burning noxious weeds on abandoned lands controlled by it. Instructions were, therefore, sent out to the local agents on the seventeenth of June apprising them of the said arrangement.

While it would have been a hardship in a great many cases to strictly enforce the Ordinance during the season 1898; in view of the very ample notice which every farmer in the infested districts had received, there could be no reasons urged against prosecutions under the Ordinance during the season of 1899. Towards the close of the inspection season it became evident that a great deal of apathy existed throughout the country, and the impression had also, to some extent, gained ground, that the Department did not wish to enforce the provisions of The Noxious Weeds Ordinance. Instructions were, therefore, sent to all inspectors on the third of August, to make a flying trip through their districts particularly visiting farms where they had reason to believe no efforts had been made to comply with the notices served, and in all cases where a tendency had been exhibited to treat the provisions of the law with contempt, to immediately lay information against such individuals, and to advise the Department of their action. It was pointed out that one or two prosecutions of particularly glaring cases in each district would, no doubt, have a salutary effect and pave the way for better observance of the law next season. The result was that some fifteen prosecutions were made and convictions in every case obtained.

During the beginning of the month of November the Territorial inspector of noxious weeds made an inspection of all the mills and elevators in the North-West Territories with a view to ascertaining whether the provisions of the Ordinance were being complied with. His report will be found elsewhere. Arrangements were also completed for a close inspection of the right-of-way of the Canadian Pacific Railway and of the Manitoba and North Western Railway but owing to lack of the necessary time at the proper season of the year, the work unfortunately had to be postponed.

A very large number of the noxious weed bulletins, prepared during 1898, were distributed throughout the country by the local inspectors, and as the edition is now entirely exhausted, I would very strongly recommend that the manuscript of a new bulletin, covering somewhat similar ground, should be prepared as soon as possible and at least 5,000 copies printed in time to be available for the coming year's work. There can be no doubt that the most effective work the Department can undertake in dealing

with the weed question will be along educational lines. Once the public is convinced that this evil may at any time become a very serious one, even to the extent of rendering farming unprofitable, and practical methods of coping with it are brought to their attention, very little difficulty need be anticipated in the administration of the Ordinance. The most serious problem is undoubtedly what to do with the foreign element of our population, which is absolutely unacquainted with our bad weeds and very few of whom ever farmed on a large scale until they came to this country. If an arrangement could be made to have the next edition of the bulletin translated into French, German and one of the Scandinavian tongues, I feel certain that excellent results would ensue.

During the month of April you addressed a communication to the Honourable Sidney Fisher, Dominion Minister of Agriculture, in which he was urged to place the Dominion botanist at the disposal of this Department for the purpose of addressing a number of meetings in the Territories on the subject of noxious weeds. Mr. Fisher readily gave his consent, and a series of meetings were consequently arranged. The first meeting was held at Moosomin on the nineteenth of June, under the presidency of Mr. Young. The meeting was addressed by Dr. Fletcher and yourself. Similar meetings were held at Whitewood on the twentieth, Grenfell on the twenty-first, Wolseley on the twenty-second, Indian Head on the twenty-third, Qu'Appelle on the twenty-fourth, Fort Qu'Appelle on the twenty-sixth, Moose Jaw on the twenty-eighth, Regina on the twenty-seventh, Fairbairn on the twenty-ninth, Glen Adelaide on the thirtieth, Clare on the first of July, Carlyle on the third, Alameda on the fourth, Oxbow on the fifth, Carnduff on the sixth and Gainsboro on the seventh, which latter meeting closed the series. An extended report of these meetings was made by Mr. Trant, who attended them for that purpose and in order to supply condensed reports to the newspapers of the districts visited, thus giving as wide a circulation as possible to Dr. Fletcher's statements and conclusions. It would be well if a full report of Dr. Fletcher's speeches were embodied in the proposed new edition of the noxious weed bulletin above referred to.

As indicated in last year's report an attempt was made during the present year by the Territorial inspector of noxious weeds to gather as many specimens of the weeds classed "noxious" under the Ordinance in the various stages of their growth as possible. Owing to press of other work in the Department, the mounting of these specimens has proceeded rather slowly. As soon as they are ready, however, full sets will be supplied to as large a number of our rural schools as possible. The collecting of these specimens should be continued from year to year, in order that in time a full set of noxious weeds, in the various stages of their growth, may be on exhibition in every country schoolhouse in the North-West Territories.

The following is the report of Mr. Willing, the Territorial inspector of noxious weeds, upon his work during the past year.

Report of Mr. T. N. Willing, Territorial Inspector of Noxious Weeds.

"After my arrival in Regina, in May, some time was devoted to familiarising myself with the methods and work done last year in connection with the control and destruction of noxious weeds in the Territories.

"The work began this season under more favorable conditions than heretofore, owing to the provisions of the new Noxious Weeds Ordinance,

which enables Inspectors to work to much better advantage, especially in regard to the handling of noxious weeds on abandoned lands.

"I commenced field work on the fifth of June, when I met Inspector Green at Moose Jaw, by appointment, for the purpose of instructing him in the particulars of his work, giving him what information I could regarding noxious weeds, their appearance, and proper nomenclature. With this intention, I took with me some mounted specimens of weeds which I considered should claim his attention. We spent some time in the inspection of the railway right-of-way and found there a dry plant of the variety known as the Russian thistle, containing a quantity of seeds, and, on making further search we found many other plants growing in the vicinity of the station, having very probably been introduced at this point by means of railroad cars coming from Dakota, where the pest abounds. I afterwards revisited the place accompanied by Mr. Green and found that the section men were keeping these thistles under fair control.

"Fort Qu'Appelle was the next point visited. Mr. McDonald M.L.A., and Inspector Dennehy reporting that stink weed was making headway, it was decided that the inspector should begin work at once and that Townships 22 in Ranges 12 and 13 should be included in the work of this district. Returning to Qu'Appelle by way of the Indian industrial school I met and had an interesting interview with Mr. Starr, the secretary of the municipality of Qu'Appelle, regarding weed inspection.

"At Wolseley I saw Inspector Biden, who informed me that stink weed, hare's ear mustard, and Canada thistle were the prevalent weeds in his district.

"At Broadview, Inspector McKenzie very kindly devoted an entire day to drive me about his district, and although it was raining I observed several persons ploughing down stinkweed and other noxious weeds; the attempt, under the weather condition, not having any great result I fear, the soil being too wet to do good work upon it. I fancy that the fact of 'the Inspector' being there to survey condition of lands had something to do with the aroused interest in weed extermination that particular day. However, Mr. McKenzie informed me that the farmers in his district were making efforts to rid their lands of weeds; stinkweed being reported to be bad. It is quite apparent that tansy mustard is gaining a foothold in this district. There is also a small amount of hare's ear mustard; the latter did not appear to be advanced in growth. A small native weed called 'whitlow grass' (*Draba nemorosa*) was causing some anxious attention; making its appearance upon land prepared for summer fallow and on stubble sown ground. It is of a yellowish colour but is not, I think, likely to prove too troublesome. Canada thistles were found in various places; a bad patch of it thriving on the nuisance ground near Broadview.

"At Whitewood, Inspector Finlay Kennedy met me on the fourteenth and we drove through a portion of his district, touching at Ohlen. Here again we found hare's ear mustard and also the tansy mustard. Shepherd's purse abounded; many of the gardens being overrun with it; it is closely allied in nature and growth to the stinkweed and should be closely watched and controlled.

"On the fifteenth, accompanied by Inspector Anderson, I called at the home of Inspector Barker but was unfortunate in not finding him at home.

"Passing through the Swedish settlement I observed a considerable amount of hare's ear mustard and tansy mustard, while, between Sumner and Mr. Barker's place, large quantities of stinkweed covered abandoned

lands. This whole section of country appeared to be more or less infested with tansy mustard. The damage to trees caused by the ravages of the pale poplar beetle must have been considerable, as, driving along underneath the trees, numbers of the beetles dropped into the conveyance. Tent caterpillars were also found on saskatoon, choke-cherry and wild rose bushes, all of which were being stripped of their foliage by these pests. Leaving Mr. Barker's place we drove to the farm of the Honourable William Eakin, where we were most hospitably received. We remained until the morning of the sixteenth when we left for Crescent Lake and visited Inspector Moore. At this point tansy mustard again appeared with whitlow grass and other common weeds.

"Returning to Ohlen, on the seventeenth, Mr. Anderson drove me in a southerly direction over an open stretch of prairie land where no settlement appeared to exist. In the Qu'Appelle Valley (in the vicinity of Round Lake) stink weed, cut leaved and grey tansy mustard were seen, growing plentifully all over vacant lands.

"On the nineteenth, Mr. Kennedy drove me north of Whitewood. We visited a number of farms there, and I observed one field in particular which was badly infested with stink weed and hare's ear mustard. A portion of this field had been ploughed, but the weed could be seen very plainly sticking out between the furrows.

"Being in Whitewood on the twentieth of June I availed myself of the opportunity of seeing Professor Fletcher, who was at the time visiting the district for the purpose of delivering a lecture on the subject of noxious weeds. The lecture was not very largely attended as the weather was bad, however, as Professor Fletcher made the subject not only instructive but interesting, those present enjoyed and profited by the occasion.

"I met Inspector Fyke on the twenty-first at the town of Moosomin. We drove south as far as the Pipestone Creek at which point—and on the Fairmede trail—stands an abandoned farm which was a mass of stink weed, false flax, shepherd's purse, pig weed, wild buckwheat, Canada thistle, blue lettuce and many other varieties of weeds. Travellers camp here and seeds are thus liable to be carried away and scattered in various ways, as on the wheels of vehicles, horses' hoofs, etc., etc. The day following Inspector Fyke drove me through a portion of his district and out to the farm of Inspector Hardaker. Throughout this section I found hare's ear mustard; though an effort to control its growth was tried by means of pulling it up. Grey tansy mustard was found, with blue burr and blue lettuce, which appeared in abundant quantities on ploughed ground and in firebreaks. On the twenty-third I was invited to attend a local picnic and being asked to do so, gave a short address on the subject of noxious weeds. The people appeared to take quite an interest in the topic, asking questions about the various weeds, of which I had mounted specimens which were shown and explained to the best of my ability. Mr. Hardaker's district (through which I passed *en route* to Glen Adelaide) is fairly clear of weeds, although wherever stubble sowing had been done the rose, wolf berry and other noxious native growths appeared to outgrow the wheat. Wild buckwheat and pigweed grow in abundance here. I am of opinion that if farmers would harrow the ground or use the weeder after the seed has been drilled in in spring, a considerable saving in the line of weed extinction work would be effected.

"On the twenty-sixth Inspector Whitlock of Glen Adelaide drove me through his district and to Clare; we inspected many farms as we passed

along. One abandoned farm, on which old buildings stood, was covered with stink weed, and another (occupied) was bad with charlock, hare's ear mustard, etc., etc. Here again I found the settlers trying to cope with the weeds by pulling, hoeing and ploughing them out. I advised Mr. Whitlock that he should include Townships 10 and 11 in Ranges 3, 4 and 5 in his district. Complaints were being received regarding stink weed and other weeds as far as north of Moose Mountain.

"From Clare I was taken by Inspector Kerr to the French settlement about Alma. We found scarcely a farm that was not more or less infested by tumbling mustard. Hare's ear mustard appears to be pretty well spread throughout this district and stink weed is also found, although I was told that strong efforts were being made to stamp it out. Stopping over night at Alma, we returned next day to Clare by a more southerly route and in the direction of Alameda. This section appeared to be free from tumbling mustard, but at a point farther north where some sod stables had stood, a dense mass of rag weed and Russian pig weed was found. At this point I met Mr. McGuirk, an ex-inspector of this district, and learned from him that he had, last season, reported tansy mustard as "rag weed" by error, making it appear that the latter was common to this district which it really is not. Approaching Alameda, stink weed, tumble mustard, hare's ear and other varieties of mustard were found prevalent, growing on the unbroken prairie. I noticed particularly that at the elevators and near railway stations, weeds abounded.

"On June 30 I proceeded to Carnduff, where I expected to find Inspector Griffin. He was, however, absent from home and only returned very shortly before the train by which I was travelling left for Gainsborough where I had an appointment with Inspector Bradley. From Mr. Griffin I learned that stink weed was plentiful throughout his district; being, he thought, brought in by railway construction camps. He also reported it to be found on the right-of-way. Instructions were at once issued to the roadmaster to cut and burn the nuisance wherever it appeared. Mr. Bradley showed me some lands which appeared to be covered with stink weed; some of it had ripened and was shedding its seeds. Here again hare's ear mustard was found, the pods being well filled. Summer fallowing was much too late in this district and most of the weed seeds were well ripened, in many cases having already dropped before ploughing was begun. On the fourth of July and while with Mr. Bradley, I saw a crop of hare's ear mustard partly ploughed under but with the tops sticking out from the ground, the result was that the seed ripened, thus defeating the object in view in fallowing. Corn cockle was also seen in quantities but was not yet in blossom.

"Returning to Carnduff, Mr. Griffin drove me around the district. Some bad specimens of stink weed showed some few miles north of the town, where hare's ear, ball, tansy, and other mustards seemed to be very plentiful. Here too summer fallowing had been too long delayed. Large quantities of plum coloured blister beetles (*Cantharides Nuttalis*) were observed in astragalus plants. North of Carnduff some twelve miles, the crops and fallows were found to be fairly clean. Professor Fletcher having arranged to deliver an address at Carnduff on the afternoon of the sixth of July, we returned in time to attend the same, taking with us some specimen weeds gathered on the trip. Next day I accompanied Mr. Bulyea, the Commissioner of Agriculture, and Professor Fletcher, to Gainsborough, where the last of the series of Professor Fletcher's meetings was held.

'At Alameda I was met by Inspector Perry, with whom I drove south through a considerable portion of country where I saw quantities of tumble weed, hare's ear, false flax, and shepherd's purse growing on old stubble and on abandoned lands. Tansy mustard, false tansy, wallflower, evening primrose and white stemmed primrose, prairie thistle, sunflower, sage, pepper grass and wormseed mustard were prevalent in stubble sown fields, and in the town some stink weed was found.

"On the tenth of July we drove westward and towards Estevan. Most of the fields had tumble and hare's ear mustard—the latter having its pods well-filled. Patches of stinkweed were found too, and one very dirty summer fallow, where many ripened seeds had been ploughed in. Throughout this district many abandoned homesteads were seen with more or less land broken and with ruined sod buildings about which tumble mustard was found. At Hirseh, the Jewish colony, the conditions spoken of last were chiefly observable.

"Wishing to secure some specimens of Russian thistle, we visited a locality on the international boundary line, where the weed was reported last year to be, at the site of an old and deserted shack. We found a few seedlings there and many larger plants on the steep hillsides of Short Creek, but not in sufficient numbers to cause much trouble to farmers; the nearest settler being three miles distant and the surrounding lands only suitable for grazing purposes. The Russian thistle, being a 'tumbler,' spreads in the direction of the prevailing winds; in this case the seeds would be carried south and towards the Dakota country. In the Souris valley stink weed was found growing freely on the railway firebreak; the ripe seeds were ploughed in and left only partially covered by the ploughs, which were worked without the chains so necessary to turn the weeds under. The ploughing of the said firebreaks being left until too late in the season, they were very dirty in appearance. A large patch of the great ragweed was found growing at the Roche Percee station. Russian thistle is reported to have been found at the right-of-way last year but the sectionmen have been keeping a sharp look-out for signs of it this year.

"Between Estevan and Pasqua very little land appears to have been cropped as yet, although considerable breaking has been done in the vicinity of Yellow Grass and Weyburn. Tumble mustard was noticed growing on the railway firebreaks. Caution should be used by settlers lest weeds should gain a foothold.

"I spent the nineteenth of July with Inspector Green in driving over portions of his district, where we saw some very dirty farms. The owners had been instructed in their duty in respect to weeds, but instructions had been ignored, the impression seeming to prevail that the law would not be enforced. In some fields hare's ear mustard was so thick that very little wheat could be seen, and on fallow land also the weed overran. One other farm showed about two hundred acres covered with ripe stink weed which was being ploughed under, but, judging by the rate of progress made, the work would not be completed in two months. The road overseers complained that they could not get enough men to keep the roads clear of weeds; and in many cases they were making more roads than they could complete or keep clean if completed.

"While in the Moose Jaw district I was directed to report on portions of Sections 22 and 24 Township 17 Range 26, where instructions to destroy weeds were being ignored. The owners of these lands assured me they would at once begin work and, although too late for the best results

no further action was deemed necessary. Without doubt the Moose Jaw district contains the worst fields of hare's ear mustard and stink weed that I have seen anywhere in the Territories.

"Returning to Regina, I was instructed to proceed north and report on the conditions prevailing in Saskatchewan and to hold myself in readiness the following week to attend Mr. Bulyea, the Commissioner who was holding a series of meetings *re* farmer's institutes, at which I was expected to give an address on noxious weeds. At Prince Albert I visited the North-West Mounted Police barracks with Mr. Thomas McKay M.L.A. There I found the Canada thistle which it was explained had been cut last year but was not prevalent this year. Going in the direction of Mr. McKay's farm the ball mustard was seen to be very plentiful while some unploughed fallows appeared covered with a heavy growth of horse weed (*Erigeron Canadensis*). I was told that a small amount of stink weed had been seen in this district, but that its growth had been successfully checked. Returning by a circuitous route to Prince Albert, some fields were seen to be quite yellow with charlock, and I also found wild oats, false flax, tansy mustard, blue lettuce, corn cockle, evening primrose and blue burr abundant. Here the soil is light and sandy on the hillsides and the hollows are filled with a heavy grass and with water sloughs. Much of the land is covered with poplar and willow trees. Numbers of vacant houses were noticed but no weeds of any account infest the fields as they have mostly reverted to sod. On the following day I drove east to Prince Albert where I found the conditions somewhat similar to those on the west side. Stink weed was growing about the town, and although both private parties and the town authorities had been cutting and pulling, small headway was made against the pests, as they were throwing the weeds aside instead of burning them. This is only a method of spreading weeds as many of the seeds ripen after being pulled, a fact which may be demonstrated by examining the dry plant. Near the railway station could be seen a number of patches of Canada thistle on the right-of-way and also at the rear of the station and facing the town. The same thing was noticed at many points along the railway line, where the weeds were making great headway and in places had attained a growth of over three feet. The common carraway (*carum carvi*) has spread all over the town, having no doubt escaped from cultivated fields. Squirrel tail or barley grass was also giving trouble, the seed blowing from waste places. Driving from Prince Albert to Duck Lake, the first part of the route lay along settled farms where ball mustard and other weeds appeared and where the Canada thistle was found along the trails. The trail runs through a succession of sand hills which are covered with jack pine and poplar trees, and is wholly unfit for cultivation. I spent one day in the Duck Lake and Rosthern districts where tumble and ball mustard were in evidence in fields; stink weed, charlock, false flax and other weeds growing about the premises of elevators. As a heavy rain was falling, an extended examination was impossible in this district.

"July twenty-second I proceeded to Saskatoon and, while waiting the arrival of the Commissioner and party, I made a brief examination of the country to the west. I found a few rather dirty fields containing Canada thistle, stink weed, wild oats, false flax, and also ball mustard. The majority of the farms were, however, fairly clean of weeds: a few specimens of tumble mustard were seen at the railway siding, as was also a patch of pig weed, and the spider plant (*cleome integrifolia*) grew luxuriantly. The

last named was brought to me amongst a variety of other weeds for identification at the institute meeting in the school house, which, I may add, was well attended. Accompanying the Commissioner north, I addressed meetings at Rosthern, Duck Lake and Prince Albert, when I again returned to Regina.

"Regarding all the introduced weeds, ball mustard appears to have made the greatest headway in the Saskatchewan district, where it is known as "only that yellow weed." Since its first appearance, a very few years ago, it has spread to almost every field under cultivation. The probable reason is that grain seed is not thoroughly cleaned before sowing, the seed with its adhering envelope being of sufficient size to pass out with the grain in threshing. The weeds are left standing about the edges of fields and the seeds then drift about with the snow. Very little summer fallow work being done as yet, the conditions are favourable for the spread of ball mustard and other weeds; the majority being varieties common to eastern Canada, charlock, wild oats, horse weed, cockle, Canada thistle, pig weed, wild buckwheat and, last but not least, sweet grass, which is often mistaken for couch grass. The weeds are not yet too far advanced to be subdued by a little extra exertion and care on the part of the farm owners, some of whom, however look upon such weeds as buckwheat and pig weed as necessary evils to be borne with and not controlled.

"In the beginning of August I attended the Indian Head fair and exhibited about eighty mounted specimens of weeds, in a tent provided by the Department for that purpose. I also had on exhibition a number of fresh, green weeds gathered in the immediate vicinity. During the time of the show, which occupied two days, a large number of persons visited the tent and appeared to show much interest in the weeds shown. Many asked for "that weed (describing it) that grows on my farm," and, recognising it among those exhibited, questioned closely regarding its growth and habits and the best means to be taken in eradicating it. Many expressed their appreciation of this practical action of the Department and said that had they known previously about the object lesson on weeds, they would have brought specimens for identification.

"No better means can be adopted for imparting information to the farmers regarding noxious weeds and their eradication than by holding agricultural shows and having a good weed exhibit, especially if the living plant can be shown.

"At the Regina show a very creditable exhibit was prepared by Mr. Honeyman of the departmental clerical staff.

"According to instructions I left Regina on the first November for the purpose of inspecting elevators, grain warehouses and mills. Great carelessness has been shown in the handling of screenings. In the majority of cases, a number of elevator managers have been allowing the farmers to remove the coarser screenings; in some cases refuse being taken away and thrown in low places on the open prairie or piled in close proximity to buildings. I also found that a quantity of small weeds were being blown out with the chaff through the dust spouts while the grain was undergoing the cleaning process, and that cattle were feeding on and trampling this about. Some of the dust spouts opened over the railway track in such a way that the small seeds would very probably be carried away on the tops of passing cars, to be blown about the country afterwards. The attention of those in charge was directed to the necessity of making such changes as would enable them to keep refuse and screenings under cover until de-

stroyed, as called for by Section 12 of The Noxious Weeds Ordinance. Taking opportunity of examining the screenings from wheat, I found that in all cases some small seeds (not always noxious) were mingled with the shrunken wheat, irrespective of what spout they would come from. Although it may be quite possible to separate these small seeds, by a careful arrangement of the sieves, it is not done in actual practice. It would be possible to utilise the shrunken wheat and buckwheat by re-cleaning the screenings and then crushing carefully. At a number of elevators complaint was made of the want of storage room for screenings. Attached is a detailed statement of the elevators and mills inspected :—

"Fleming.—Three elevators, owned respectively by Brigham & James, Lake of the Woods Milling Company and Winnipeg Elevator Company. The first and third named are run by gasoline ; the second does not clean and uses horse power.

"Moosomin.—Four elevators owned respectively by Brigham & James, Lake of the Woods Company, Ogilvie Milling Company, and J. Sharpe. The last mentioned is operated by gasoline, the Lake of the Woods Company's elevator by horse power, and the others by steam.

"Red Jacket.—Two elevators owned by Brigham & James, and the Dominion Elevator Company respectively ; both operated by gasoline.

"Wapella.—Three elevators and a flour mill, owned respectively by the Northern Elevator Company, Dominion Elevator Company, K. Nixon, and J. Sanders ; the first mentioned is operated by gasoline and the others by steam.

"Whitewood.—One elevator and a flour mill, owned by Dominion Elevator Company and J. Sanders ; both operated by steam.

"Broadview.—Two flat warehouses.

"Wolseley.—Two elevators and a flour mill owned by the Dominion Elevator Company (gasoline) ; Ogilvie Milling Company (horse-power) ; Wolseley Milling Company, run by steam.

"Grenfell.—One elevator and a mill, owned by the Winnipeg Elevator Company and the Grenfell Milling Company ; both operated by steam.

"Summerberry.—Two elevators, owned by the Winnipeg Elevator Company and the Grenfell Milling Company (the latter not inspected).

"Sintaluta.—Five elevators, owned by The Lake of the Woods Milling Company, Ogilvie Milling Company, Winnipeg Elevator Company, Farmers' Elevator Company and Dominion Elevator Company. The first named does not clean ; the last mentioned uses gasoline, and the others are operated by steam.

"Indian Head.—Seven elevators and a mill, owned by the Winnipeg Elevator Company, Northern Elevator Company, Dominion Elevator Company, Lake of the Woods Milling Company, and the Farmers' Elevator Company ; one in connection with the mill belonging to Wilson, George & Wilson ; Canadian North-West Elevator Company. The first three being run by gasoline and the balance by horse power ; while the mill and Farmers' elevator are operated by steam.

"Qu'Appelle.—Three elevators and a mill, owned by the Winnipeg Elevator Company (gasoline) ; Lake of the Woods Milling Company (horse power) ; Northern Elevator Company (steam) ; D. Moore (steam) flour mill.

"McLean.—One elevator ; owned by Northern Elevator Company (gasoline).

"Balgownie.—Three elevators ; owned by Winnipeg Elevator Company ;

Dominion Elevator Company and Northern Elevator Company. The first named is operated by steam, the others by gasoline.

"Regina.—Two elevators and flour mill; owned by Winnipeg Elevator Company and Western Milling Company. All operated by steam.

"Pense.—One elevator; run by The Northern Elevator Company and using gasoline.

"Grand Coulee.—One elevator; owned by The Canadian North-West Elevator Company, gasoline used.

"Belle Plaine.—One elevator; the Canadian North-West Elevator Company and operated by gasoline.

"Moose Jaw.—Three elevators; owned by the Ogilvie Milling Company (horse power); Winnipeg Elevator Company (steam); Canadian North-West Elevator Company (gasoline).

"Boharm.—One elevator; owned by Winnipeg Elevator Company (gasoline).

"Caron.—One elevator; owned by Winnipeg Elevator Company, steam used.

"Lumsden.—Two Elevators; owned by Winnipeg Elevator Company and the Farmer's Elevator Company (steam).

"Wascana.—Two elevators; owned by Winnipeg Elevator Company and The Northern Elevator Company; both using gasoline.

"Frobyshire.—One flat Warehouse owned by Wm. Hopper of Alameda.

"Alameda.—Three elevators; owned by The Northern Elevator Company (steam); Dominion Elevator Company (gasoline); Lake of the Woods Milling Company (horse power).

"Oxbow.—Three elevators; owned by Winnipeg Elevator Company (steam); Dominion Elevator Company (gasoline).

"Glen Ewen.—One elevator; owned by Winnipeg Elevator Company (gasoline).

"Gainsborough.—Two elevators; owned by Dominion Elevator Company (steam); and Northern Elevator Company (steam).

"Carievale.—Two Elevators; owned by the Dominion Elevator Company (gasoline); and the Northern Elevator Company (steam).

"Carnduff.—Three elevators and a flour mill; owned by Dominion Elevator Company; Northern Elevator Company; Farmer's Grain Company and the Antler Flour Mill; all operated by steam.

"As a rule the people have been much pleased with the efforts made by the Government to prevent the further spread of noxious weeds, and have willingly assisted by carrying out the instructions of inspectors. By the destruction of so many weeds on vacant lands, the farmers have been much encouraged and helped in cleaning their own fields. Although much has been done, a great deal is yet to be accomplished, and the fight must be continued for some years before visible results will be attained. The spread of information as to the nature and names of plants and the best methods of handling the various weeds, is bound to tell and will prove an important factor in the struggle. Some careless persons will be found in all communities and an occasional fine for infraction of The Noxious Weeds Ordinance would have a very beneficial effect in the educational process.

"At Regina, information was laid by me, against a farmer, for removing screenings containing seeds of noxious weeds from the Western Milling Company's mill. A fine of three dollars and costs was imposed. Several other farmers were observed removing screenings from the elevator, but as I had examined the same and had found no seeds of noxious weeds, but

simply shrunken wheat, wild buckwheat and pig weed, they were, of course, not interfered with in the action.

"To derive the full benefit from prosecutions for neglect to destroy weeds, action should be taken early in the season, in order that steps might be afterwards taken to deal with the weeds in question. I have heard of men saying that they would pay a fine rather than destroy the weeds on their premises, as it would cost less. Such persons, in many cases, have pursued a policy of procrastination, until it was too late to do any good by cutting the weeds, as the seeds were then ripe.

"After having visited those portions of the Territories in which farming operations are carried on to any extent, I have no hesitation in stating that by intelligent and persistent effort on the part of the farmer, with the assistance given by the Government in the handling of vacant lands, weeds may be subdued to such an extent that millions of bushels of grain will annually be added to the crop aggregate, and a corresponding additional profit accrue to the farmer.

"A great lack of knowledge is displayed throughout the country on the subject of poisonous weeds, a number of which I had on exhibition at Indian Head. Although a few cases of suspected poisoning of horses, cattle and sheep have been reported, no reliable information as to the cause could be found, owing to the fact that cases were not promptly reported and the contents of the stomach were not retained for examination. In one case of cattle dying, the plant suspected was brought in by Dr. Burnett of the North-West Mounted Police, and it proved to be seaside crow-foot, a small species of buttercup, (*R. Cymbalaria*) which had not hitherto been thought injurious, although some other species are so regarded, owing to their acrid blistering juice.

"In Alberta this summer a horse died from some unknown cause in a district where the loco weed (*O. Lambertii*) grows in abundance. The symptoms were said (by people from the western States) to be those of loco poisoning, but the contents of the stomach of the animal were not kept for examination. The loco weed gives a good deal of trouble in some of the western portions of the United States, where efforts have been made to eradicate it from pasture lands. As this plant is very common in various parts of the Territories, it is not easy to say why cases of poisoning are not frequent. It must be that the abundance of good pasture grasses prove more attractive to stock, or that the weed does not possess poisoning properties to the same extent when growing under the conditions prevalent in our North-West. It would be interesting and instructive to have investigations made relative to this subject.

"While no cattle have been reported lost from larkspur poisoning this year, a number of sheep are supposed to have died from eating this weed in the Cypress Hills district.

"No doubt, some of the losses of cattle, where poisoning was suspected, in Northern Assiniboia, were due to the *cicuta*, also known as water hemlock or water parsnip. I have frequently seen those weeds growing by the roadside in low places and along creeks."

AGRICULTURAL SOCIETIES.

During the year the Department has kept in very close touch with agricultural societies. An attempt has been made to utilise these societies, as far as is possible, as agents for the Department in their respective

localities. In all cases where it has been found desirable to give publicity to any scheme in the interest of agriculture formulated by the Department, the officers of these societies have invariably been advised and requested to communicate the same to the members. The result of this policy has been that these societies have exhibited a healthy tendency to interest themselves in matters agricultural, of interest to their districts.

As intimated in last year's report, the great majority of our agricultural societies have in the past been thoroughly imbued with the idea that, beyond the holding of shows, no other duties devolved upon them. I am pleased to be able to state that the past year has shown unmistakable evidence of a desire on the part of most of these societies to devote attention to the more important objects for which they were organised, and in a great many cases the officers have rendered extremely useful assistance to the Department in its effort to encourage the importation of pure bred stock. Some societies have, however, exhibited an utter neglect to cooperate with the Department, but it is hoped that in time all these organisations will develop into convenient media through which to reach the farmers of the Territories.

A great deal of carelessness prevailed in the past regarding the filing of the statutory returns and Treasurers' bonds. Owing to the amendments made last session to The Agricultural Societies Ordinance, a good deal of misapprehension seemed to exist as to the date and manner of rendering returns, and notwithstanding the fact that every secretary had been notified of the change by circular, a good deal of delay occurred in getting proper returns filed.

The total number of members of agricultural societies for the whole of the Territories for the year 1899 was 5,275, as compared with 4,587 in 1898. 34 agricultural exhibitions were held, as compared with 22 in 1898. The total receipts, outside of Government grants for 1899 amounted to \$14,593.34, which however, includes the Territorial grant earned in 1898. A statistical statement is appended showing the details of the returns of all agricultural societies.

AGRICULTURAL SOCIETIES, 1899.

Name of Society	No. of Members	Show held	Balance on hand	Federal and Territorial Grant	Receipts from other sources	Total Receipts	Total Expenditure	Total Liabilities
Lorne	160	Oct.	\$171 37	337 63	\$1,291 95	\$1,800 95	\$1,431 70	\$1,265 90
Alameda	112	Sep.	90 00	242 18	202 12	534 30	71 43	not stat'd
Moosomin	154	Oct.	6 10	329 66	250 05	585 81	175 93	not stat'd
Rosthern & Hague	136	Oct.	.....	294 08	434 75	728 83	180 92	551 75
Moose Jaw	70	*	166 54	151 36	68 73	386 65	185 45	157 25
Macleod	161	Sep.	28 50	338 95	922 00	1,289 45	1,820 83	831 33
Medicine Hat	104	Oct.	72 00	224 88	404 10	700 98	492 08	.....
Stirling	117	Oct.	25 95	252 98	95 00	373 94	60 80	not stat'd
Carrot River	52	None	182 54	112 44	52 00	346 98	57 10	.....
Pheasant Forks	172	Oct.	143 14	353 55	172 50	669 19	294 65	307 00
Grenfell	101	Sep.	99 37	218 38	143 05	460 81	96 25	101 08
Fish Creek	91	†	135 89	196 77	573 60	906 26	554 20	196 77
Broadview	83	Sep.	250 32	179 47	225 95	655 74	466 53	275 00
Gainsborough	80	Oct.	160 56	172 99	80 00	413 55	115 30	222 50
S. E. Assiniboia	127	Oct.	142 12	274 61	119 40	536 13	261 03	265 65
S. Qu'Appelle	124	Aug.	139 60	268 12	569 06	976 78	708 32	not stat'd
Whitewood	151	Sep.	5 57	325 68	201 75	533 00	172 56	365 50
Red Deer	115	None	431 22	248 67	261 98	941 87	514 55	.....
Pincher Creek	81	None	188 30	175 14	198 00	561 44	301 59	.....
Innisfail	152	Oct.	73 48	327 01	708 35	1,108 85	657 20	.....
Regina	278	July	.....	494 21	950 59	1,444 80	1,277 79	.....
Lethbridge	87	Sep.	39 45	188 11	430 20	657 76	446 34	.....
N. E. Assiniboia	84	Sep.	191 31	181 63	68 00	440 94	45 00	not stat'd
Battle River	51	*	90 62	110 27	51 00	251 89	93 00	.....
Indian Head	225	Aug.	132 54	423 88	510 00	1,066 42	426 94	not stat'd
Wolseley	102	Oct.	\$	220 50	434 41	654 97	434 41	not stat'd
Yorkton	105	Sep.	133 25	227 04	58 99	414 29	130 15	497 05
E. Moose Mountain	190	Sep.	58 05	377 44	213 05	648 54	151 61	396 50
Little Cut Arm	56	Sep.	72 56	121 09	98 35	292 00	170 91	not stat'd
S. Saskatchewan	53	Sep.	58 00	114 60	197 47	370 07	152 80	not stat'd
Wetaskiwin	138	None	.....	298 40	297 10	.....	15 90	.....
Olds	61	None	.....	131 88	61 00	192 89	.....	.....
Edmonton	No	returns	.....	.....	.....	.....	.....	.....
Qu'Appelle	101	Nov.	15 64	218 38	101 00	335 03	184 01	.....
Sheep Creek	50	None	149 18	127 57	59 00	335 75	40 50	49 28
Maple Creek	72	Sep.	308 76	155 68	134 70	599 14	324 00	203 00
Wapella	127	Oct.	57 73	274 61	736 18	1,058 52	399 82	not stat'd
Moose Mountain	118	Oct.	209 44	255 15	196 53	661 12	466 20	.....
Lacombe	83	Oct.	12 94	179 47	325 05	517 46	314 45	175 82
Gen. Saskatchewan	85	Sep.	193 20	183 79	255 04	632 03	324 40	not stat'd
Fairmeade	127	Oct.	102 62	274 61	264 40	641 63	97 88	487 75
Ft. Saskatchewan	110	Sep.	36 31	237 86	510 85	785 02	545 40	not stat'd
Calgary	318	Sep.	.....	547 29	318 00	865 29	250 17	.....
Davisburg	54	†	5 75	116 76	91 25	213 76	77 72	not stat'd
Duck Lake	72	None	212 20	155 68	142 00	509 88	220 25	.....
S. Edmonton	176	July	321 98	358 86	1,114 82	1,795 66	1,465 58	808 72
St. Albert	No	returns	.....	.....	.....	.....	.....	.....
The Territories	5,275		4,914 11	10,999 41	14,593 34	29,896 37	16,673 65	

* No show held; prizes awarded in grain competition.

† Co-operated with Inter-Wester Pacific exhibition.

§ \$57.66 debit balance.

During the early part of the summer, the Department was requested by the Commissioners for the International Exhibition at Paris, to procure a grain exhibit representative of the North-West Territories. Acting on this request the following circular was addressed to all secretaries of agricultural societies:

This Department has been requested by the Commissioners for the International Exhibition at Paris in 1900 to procure samples of the various grains produced in the North-West Territories in connection with the Canadian exhibit on that occasion, and it has, therefore, been decided to adopt the following plan. Three prizes will be offered by the Government at each of the forthcoming fall shows: \$3.00 for the best half bushel of wheat, \$2.00 for the best half bushel of oats and \$2.00 for the best half bushel of barley; open only to grain raised during the season of 1899. The grain to be exhibited in a white duck sack and the prize-winning exhibits to become the property of the Government. These samples will then be shipped to the Department of Agriculture at Regina and any agricultural society which has not held a show during 1899, or held a summer show where grain of 1899 could not be exhibited, will then be invited to forward to the Department an exhibit, each of wheat, oats and barley raised in the district represented by such society, and after submitting the whole to competent judges, the following prizes will be awarded to the persons who raised the grain:

Best sample of wheat for Territories, gold medal and diploma; second best sample, silver medal and diploma; third best sample, bronze medal and diploma.

Best sample of oats for Territories, silver medal and diploma; second best sample, bronze medal and diploma; third best sample, diploma.

Best sample of barley for Territories, silver medal and diploma; second best sample, bronze medal and diploma; third best sample, diploma.

The prize-winning samples will be sent to Paris as part of the national exhibit.

Twenty-four exhibits of wheat, twenty-one of oats and twelve of barley were received in the Department in response to the offer made, and the following is the result of the Territorial competition:

Red Fyfe Wheat: 1st prize, F. Cunningham, Broadview, gold medal and diploma, (Broadview Agricultural Society); 2nd prize, Alex. Donaldson, Fort Qu'Appelle, silver medal and diploma, (Qu'Appelle Agricultural Society); 3rd prize, William McMillan, High View, bronze medal and diploma, (Moosomin Agricultural Society).

Oats: 1st prize, P. Grimsky, Churchbridge, Silver Medal and Diploma, (North-east Assiniboia Agricultural Society); 2nd prize, Thomas Daly, Clover Bar, bronze medal and diploma, (South Edmonton Agricultural Society); 3rd prize, R. Kells, Maple Creek, diploma, (Maple Creek Agricultural Society).

Barley: 1st prize, P. Grimsky, Churchbridge, silver medal and diploma (North-east Assiniboia Agricultural Society); 2nd prize, W. Clements, Cannington Manor, bronze medal and diploma, (East Moose Mountain Agricultural Society); 3rd prize, L. W. Griffin, Moosomin, diploma, (Moosomin Agricultural Society).

At the request of the Department, the Chief Grain Inspector at Winnipeg, Mr. David Horne, kindly consented to judge the wheat, while the oats and barley were judged by Mr. Angus McKay, Superintendent of the Dominion Experimental Farm at Indian Head.

Numerous requests were received in the Department from officers of agricultural societies, to furnish judges for the various shows of these societies in the Territories. The difficulty in the way of complying with these requests was, in the majority of cases, the fact that a large number of the societies had fixed the dates of their exhibitions without the slightest regard to the dates decided upon by neighboring societies. The Department was asked by two or three societies along the Calgary and Edmonton line to take charge of the judging and signified its willingness

to do so if the dates rendered such an arrangement convenient or possible. It was, however, found that the Fort Saskatchewan society had fixed on the twenty-ninth of September, Innisfail on the fifth of October, Lacombe on the twelfth of October, while the Olds, Wetaskiwin and Red Deer Societies had decided not to hold shows. Under the circumstances, it was impossible to meet the wishes of the societies, as the judge would have had to remain over two weeks in the district in order to take in three small shows. Only in the case of the Regina and Indian Head summer shows was it found possible to meet such requests; Mr. John A. Turner of Millarville, Alberta, acting as judge in the live stock classes, at these exhibitions.

There can be no doubt as to the advisability of securing expert judges in connection with our agricultural exhibitions. If our agricultural shows are to properly fulfill their mission and be of the highest educational value, it is of the very utmost importance that the awards should be made by thoroughly competent men, absolutely removed from local influence. If arrangements could be made during the coming season to induce Territorial societies to cooperate with respect to dates of exhibitions, the effect would be that not alone would the Department be able to supply expert judges, but it would be to eastern exhibitors of pure bred stock, a great incentive to bring their herds into the Territories, particularly if a series of exhibitions followed the summer shows at Winnipeg, Brandon, Regina and Calgary. These men are all anxious to advertise their stock and would, no doubt, go to any reasonable expense and trouble to be represented at our smaller shows, provided five or six could be attended in consecutive order without any considerable loss of time.

Agricultural societies have in the past received their grants from two sources, namely, this Department and the Federal Department of Agriculture, and it has, therefore, been necessary for them to prepare two distinct sets of returns. The Federal Government annually appropriates the sum of \$7,000.00 which is distributed among agricultural societies upon a basis fixed by the Minister of Agriculture. Arrangements were made during the year, by which the amount in question would practically be apportioned by this Department, and agricultural societies were, therefore advised that only one set of returns would be required.

FARMERS' INSTITUTES.

During the last session of the Assembly the sum of \$1,000.00 was appropriated for the encouragement of institute work by agricultural societies. In addition to the meetings held throughout the Territories in the interest of noxious weed destruction, addressed by Professor Fletcher, the following institute work was arranged during the past year.

Meetings were held under the auspices of the Fort Qu'Appelle, South Qu'Appelle, Indian Head and Wolseley agricultural societies, at Qu'Appelle Station on the twenty-third of January; Fort Qu'Appelle on the twenty-fourth; Indian Head on the twenty-fifth, and at Wolseley on the twenty-sixth. The speakers were Mr. Angus Mackay, Superintendent of the Indian Head Experimental Farm, Mr. J. A. Kinsella, Superintendent of Government Creameries, Mr. Wm. Trant and the undersigned.

Under the auspices of the Central Saskatchewan, Rosthern, Duck Lake and Prince Albert agricultural societies, meetings were held as follows: At Saskatoon on twenty-fifth of July; Rosthern, on the twenty-sixth, Duck Lake on the twenty-seventh, and Prince Albert on the twenty-eighth.

The speakers were yourself, Mr. T. N. Willing, Territorial Inspector of Noxious Weeds, and Mr. Geo. Harcourt, B.Sc.A., Editor of The Nor-West Farmer.

Under the auspices of the Saltcoats and Yorkton agricultural societies, meetings were held at Yorkton on the twelfth of June and at Saltcoats on the thirteenth of June. The Speakers were Mr. Angus Mackay, Superintendent of the Indian Head Experimental Farm, Mr. F. W. Mitchell, Dairy Superintendent, and the undersigned.

Meetings were also held along the Calgary and Edmonton railway as follows: At Red Deer on September twenty-ninth; Lacombe, September thirtieth; Wetaskiwin, October second; Edmonton, October third; Fort Saskatchewan, October third; St. Albert, October fourth; Strathcona, October fourth; Innisfail, October fifth; and Olds on October sixth.

The meetings were, as a rule, successful and fairly well attended. No pains had been spared, in the majority of cases, to have them well advertised.

I do not know that I can add much to the statements made in the report of the Department of last year as to the value of farmers' institute work. I regard this work as the legitimate work of agricultural societies. If these societies would devote less attention to inferior exhibitions and more to the holding of meetings for the discussion of agricultural subjects, the result would be beneficial to every community served. It is hoped that the coming season will witness vigorous action on the part of agricultural societies with a view to prosecuting farmers' institute work.

DAIRY INDUSTRY.

The past season was fairly favourable to the dairymen all over the Territories. Copious rains fell from time to time during the summer, and, although the somewhat chilly weather was responsible for a decreased flow of milk, the rank pasture which lasted all through the summer, and a comparative absence of flies, counteracted to some extent the baneful effect of the unfavourable weather.

The number of Government creameries operated during the year was 21 as compared with 20 in 1898 and 16 in 1897. The Indian Head creamery ceased operations during the year, but new stations were opened at Cardston and Tindastoll. Through the courtesy of Prof. Robertson, I submit statements showing a summary of the business of the Dominion experimental dairy stations in the Territories for the seasons of 1897, 1898 and 1899, together with a recapitulation thereof.

SUMMARY OF BUSINESS FOR SEASONS 1899-8-7 AT DOMINION EXPERIMENTAL DAIRY STATIONS IN THE NORTH-WEST TERRITORIES.

NAME OF STATION.	No. of Patrons.	Inches of Cream Supplied.	Lbs. of Milk Supplied.	Lbs. of Butter manuf'd.	Aver. Price realised at Creamery.	Manuf'g charge p lb.	No. of days in operation.	Gross Value of Product.
					cts.	cts.		\$ cts.
Calgary.....	1899 43	24,806.7	.....	24,677	21.56	4	174	5,319 47
	1898 59	15,627	125,186	19,389	20.25	4	168	3,926 70
	1897 31	7,056	168,957	14,071	19.40	4	143	2,729 80
South Edmonton..	1899 49	14,149.9	70,144	17,322	20.96	4	160	3,631 56
	1898 48	12,346	115,036	17,068	18.80	4	156	3,209 19
	1897 90	13,901	327,451	27,364	17.62	4	148	4,840 26
Wetaskiwin.....	1899 71	14,815.4	403,581	32,350	20.99	4	184	6,789 29
	1898 58	8,576	456,914	27,136	20.08	4	192	5,449 65
	1897 47	2,669	342,980	17,691	18.49	4	122	3,306 43
Red Deer.....	1899 110	46,676	157,306	62,142	20.87	4	184	12,968 23
	1898 76	28,253	217,572	42,878	19.84	4	184	8,507 54
	1897 66	22,079	225,067	30,148	18.59	4	150	5,639 83
Innisfail.....	1899 156	68,924.8	349,682	86,040	20.69	4	184	17,805 53
	1898 105	39,003	437,405	57,717	20.40	4	184	11,775 55
	1897 81	19,143	390,645	38,621	18.87	4	150	7,304 36
Tindastoll.....	1899 66	6,350.2	162,406	14,655	21.78	4	112	3,192 51
Cardston.....	1899 14	.....	101,075	4,142	22.40	4	100	927 91
Maple Creek.....	1899 12	7,283.8	.....	7,921	21.41	4	128	1,696 56
	1898 15	11,621	.....	12,362	20.06	4	158	2,479 99
	1897 21	9,943	.....	9,921	20.28	4	100	2,033 99
Moose Jaw.....	1899 34	27,974.7	.....	34,915	20.48	4	191	7,152 62
	1898 39	31,580	.....	37,999	20.00	4	179	7,603 53
	1897 57	35,277	191,077	49,265	17.86	4	168	8,887 74
Regina.....	1899 47	21,181.9	.....	23,051	20.04	4	160	4,615 33
	1898 49	24,301	.....	25,450	19.05	4	157	4,849 26
	1897 74	31,864	.....	30,502	17.56	4	150	5,383 63
Qu'Appelle.....	1899 45	17,158.1	.....	16,561	20.22	4	148	3,348 45
	1898 66	26,713	.....	26,188	18.70	4	150	4,898 22
	1897 97	27,020	.....	25,960	18.52	4	127	4,808 85
Indian Head.....	1899 6	3,800	.....	3,994	20.00	4	128	798 62
	1898 61	20,362	.....	22,715	17.33	4	156	3,959 21
	1897 11	954.3	44,621	2,922	20.23	4	134	591 26
Wolseley.....	1899 35	2,688	281,611	13,873	18.76	4	146	2,603 35
	1898 47	5,888	339,330	20,029	17.93	4	122	3,624 91
	1897 89	36,276.5	.....	42,284	20.07	4	175	8,485 70
Whitewood.....	1899 85	41,271	.....	44,308	19.07	4	166	8,450 52
	1898 131	48,908	.....	46,871	17.77	4	120	8,340 03
	1897 40	7,725.6	.....	8,461	20.67	4	118	1,748 34
Moosomin.....	1899 47	14,567	.....	14,523	18.55	4	134	2,695 28
	1898 113	35,331	.....	31,583	17.48	4	135	5,586 09
	1897 71	32,204.4	.....	39,154	20.28	4	152	7,943 02
Grenfell.....	1899 77	35,179	.....	42,838	19.04	4	149	8,156 47
	1898 80	35,319	.....	39,706	17.64	4	120	7,047 20
	1897 50	18,680	.....	17,491	20.21	4	143	3,535 19
Yorkton.....	1899 91	38,961	.....	35,413	18.26	4	137	6,466 61
	1898 109	54,586	.....	49,352	16.74	4	144	8,362 48
	1897 84	29,739.6	.....	31,674	20.19	4	167	6,396 77
Churchbridge.....	1899 70	21,429	.....	22,223	18.85	4	111	4,189 21
	1898 45	13,898.3	.....	13,190	20.07	4	139	2,647 58
	1897 76	21,343	.....	18,779	18.15	4	139	3,409 85
Saltcoats.....	1899 22	10,366.5	.....	13,758	20.44	4	136	2,812 54
	1898 31	10,717	7,237	12,644	18.51	4	143	2,340 64
	1897 43	8,601	261,891	20,104	16.95	4	144	3,409 34
Saskatoon.....	1899 13	7,929.1	14,406	9,197	20.49	4	146	1,884 46
	1898 18	8,631	16,581	10,202	18.92	4	153	1,930 49
	1897.....	.....	.....	.....	.....	.....	.....	.....
The Territories....	1899 1,072	407,095.8	1,303,221	501,907	20.70	4	3,035	103,492 32
	1898 1,051	396,606	1,657,542	484,948	19.22	4	2,934	93,740 67
	1897 1,148	377,947	2,239,398	473,903	18.06	4	2,199	85,264 15

A large number of patrons manifested considerable uneasiness as the expiration of the period approached for which the Department of Agriculture at Ottawa had agreed to operate these creameries. It appears, however, that these institutions will be carried on under the present management for some time yet.

An examination of the above statements reveals the fact that the patronage of the Government creameries is increasing in the westerly portion of the Territories and decreasing in the easterly portion. The dairy industry labours under very serious disadvantages in this western country. In South-eastern Assiniboia, "wheat is king," and nothing short of repeated crop failures induces the farmer to patronise the creamery. A further difficulty is the scarcity of prairie pasture convenient to the farms, particularly in localities where land commands a high price and is wholly utilised for wheat growing. It stands to reason that a profitable dairy industry cannot be built up there, until the farming community has been convinced that a larger return awaits them from devoting their time, capital and energy to dairying and mixed farming than to "wheat" farming. This is a question which might with propriety engage the attention of our agricultural societies.

While the westerly and northerly portions of the Territories are naturally better adapted for dairying than Eastern Assiniboia, the industry there is encompassed with precisely the same difficulty, although clothed in a somewhat different garb. The farmer or stockman there entertains the gravest scruples against making any sacrifice on the score of beef in order to patronise the creamery, and in the vast majority of cases dairying forms only a secondary consideration. The present high prices of beef will, of course, further accentuate the difficulty. *

A deep-rooted superstition prevails in respect to skim milk calves. The average stockman is perfectly satisfied in his own mind that such a thing as raising prime beef from skim milk calves is a myth. No doubt this prejudice is principally due to the notorious lack of attention to details in feeding and caring for the young calves usually incidental to pioneer existence. The majority of the western farmers or stockmen have not the necessary facilities for the successful raising of these calves, and the result is often irregularity in time of feeding as well as in quantity and temperature of milk. After having been fed on a milk diet for ten or twelve weeks, the young calf is too often sent out with the herd to shift for itself, its efforts probably supplemented by a small skim-milk ration night and morning. It stands to reason that as long as these methods prevail, the prejudice against the skim-milk calf and the consequent prejudice against dairying operations, are not likely to vanish.

While on this subject it might be appropriate to quote the result of careful experiments on the subject of calf feeding at the Kansas Experiment Station. If young calves are fed and cared for in accordance with the following suggestions, little fear need be entertained of their failure to develop into profitable cattle if, of course, their breeding is right.

Allow the calf with the fresh cow four or five days. This gives the calf a vigorous start and aids in reducing any inflammation in the udder of the cow. Wean by feeding ten pounds (one quart equals about two pounds) whole milk daily in three feeds, and gradually increase the amount to twelve or fourteen pounds, always weighing or measuring each feed. More calves are lost by over-feeding than through any other cause. When two weeks old the calf may be changed to skim milk, but not faster than at the rate of one pound a day, i.e., the first day give 11 pounds of whole milk and one pound of skim milk, the second ten pounds whole milk and two pounds skim milk, and so on until the change is complete. The amount of skim milk may be increased

gradually, but not to exceed eighteen to twenty pounds daily per head. Flax seed gruel may be added to replace the butter fat. This is made by mixing ground flax-seed in cold water, adding boiling water and allowing to steam a few hours with cover on the pail. A teaspoonful of this gruel is enough at first but this may be increased gradually to one half pound meal daily per head. Flax seed is better than linseed meal since the oil is needed to replace the butter fat.

Calf milk must always be fed blood warm (95 to 100 degrees F.) and a careful feeder will occasionally test the temperature with a thermometer. Skim milk not used when separated may be cooled and rewarmed when fed. Sterilising creamery skim milk greatly increases its value for calves by enabling the farmer to keep it sweet until the following morning.

Calves will begin to eat meal when ten days to two weeks old. Put a little in their mouths after feeding the milk, and they will soon eat from the feed boxes with a relish. Never mix the grain with the milk.

Calves will nibble at hay about the time they begin to eat grain. Mixed or prairie hay is good; alfalfa or clover is better. Our calves have been eating about one pound daily per head of mixed hay. Before turning on pasture in spring it is well to feed some green feed, which may be increased gradually until the calves get all they will eat. A sudden change of pasture is liable to produce scours.

Calves can be prevented from sucking each others ears and mouths by leaving he tied separately for half an hour after feeding.

To summarise: warm, sweet milk fed in clean buckets, supplemented with a little ground flax seed or Blachford's meal; with access to corn or Kaffir-corn meal; bright hay; fresh clean water; plenty of sunlight, shelter and bedding in cold weather; shade in summer; and regularity and kindness in treatment will usually insure good thrifty calves that will gain from one and a half to two pounds daily.

Another fruitful source of failure on the part of the dairyman, is the lack of early and late pasture upon nearly all farms in the Territories. The native grass is late in making its appearance in the spring, and contains very little succulent feed after August in an ordinary dry year. The cows naturally fall off in milk, and, what is worse, the young heifers are dried off early in the fall, as most farmers hardly consider it worth while to milk them, owing to the small yield, and they are thus trained to a very short milking season, which in the course of one or two generations, renders them unprofitable dairy animals. Before dairying can be prosecuted to the greatest advantage in this country, fenced pastures in close proximity to the buildings, seeded with an early grass, such as *bromus inermis*, are absolutely indispensable. A crop of hay might possibly be taken early in the season off this field, which would still furnish green and succulent pasture during the late summer and up to October in the ordinary year. Some farmers have had great success with an acre or less of mangolds, available for feeding, top and root, from the late summer up to the time the snow falls, thus largely helping out the scanty pasture. The turning out of the milch cows too early in the spring, while the days are chilly and the feed insufficient, is also a practice of common occurrence everywhere in the Territories and the cause of much complaint on the part of creamery managers.

I regret exceedingly to have to report continued apathy in connection with the improvement of dairy stock. Only one or two dairy sires were brought into the Territories during the past year, as far as I am aware. The present aim is entirely towards beef and even enthusiastic dairymen are, to my knowledge, crossing native milch cows of good dairy type with bulls of beef breeds, with the object of increasing the size of the steers, utterly disregarding the milking quality of the female progeny. The situation is not at all encouraging; the only bright spot on the horizon from a dairyman's point of view, is the continued excellent market in British Columbia.

CATTLE.

The market conditions during the past year have been exceedingly favourable to the cattle growers of the west, the prices received having ruled higher than for several years past. Assertions are frequently made to the effect that the present buoyant condition of the market is due the formation of a "trust" and is altogether an artificial development. An examination of the following figures, showing a decrease of cattle in the United States during the past decade, will probably convince the most sceptical as to the legitimacy of present values; particularly when taking into consideration the greatly increased demand, both at home and abroad, owing to the present industrial and commercial activity all over the world.

YEAR.	TOTAL CATTLE.	PER 1,000 OF POPULATION.
1890.....	36,849,042	589
1891.....	36,875,648	575
1892.....	37,651,239	573
1893.....	35,954,196	531
1894.....	36,608,168	531
1895.....	34,364,216	488
1896.....	32,085,409	466
1897.....	30,508,402	414
1898.....	29,264,000	389
1899.....	27,994,225	365

It is, however, interesting to note that, although the numbers have decreased considerably, the aggregate value of all beef cattle in the United States was greater this year than it has been since 1887, indicating, of course, a much larger valuation per head than that of previous years.

That the decrease referred to is not an incidental one, but a state of affairs which will be aggravated from year to year, is quite apparent. The immediate cause of the steady decrease in numbers which has been going on since 1894, may be found in the crowding out of stock in the ranching districts of the southern and western States, where the enormous cattle ranges are rapidly being eaten out and settlement is crowding in, causing a tendency towards a reduction in numbers, but, on the other hand, towards greater care in the rearing of the stock and higher individual perfection, at of course, an increased cost of production and consequent higher value per head.

It is estimated that 67,000 head of cattle were shipped out of Manitoba and the North-West Territories during 1899, as compared to 59,000 in 1898, 60,000 in 1897, 33,000 in 1896, 50,000 in 1895 and 30,000 in 1894. The cattle shipments out of the North-West Territories alone, are given elsewhere under the head of Stock Inspection. In addition to the 41,471 head of finished cattle exported to British Columbia and the British market, seventy carloads of dressed beef left the Territories for outside points. A large abattoir was erected at Calgary during the year and it is expected that in the near future the trade with British Columbia will largely develop into a dead meat one.

The export market for cattle opened at about $4\frac{1}{2}$ cents off cars at Winnipeg and has ranged from that price down to $3\frac{1}{2}$ cents for choice steers.

When it is considered that extra prime steers were quoted in Chicago at from 5.60 to 5.75 cents on the first of June, at 5.65 to 6 cents on the first of July, at 5.70 to 5.85 cents on the first of August, at 6.40 to 6.85 cents on the first of September, and at 6.75 to 7.40 cents on the first of December, it is quite apparent, even admitting a somewhat lower grade of quality in our export stock and making allowance for freight, that Territorial cattlemen have not been receiving an unwarranted large price for their stock.

A very large business has developed in stockers. Such cattle sold during the year at from \$13.00 to \$16.00 per head for yearlings and \$18.00 to \$22.00 for two-year-olds. Fair to good yearlings were worth \$14.50 per head. The total number disposed of by farmers in the easterly portion of the Territories amounted to 10,000 and in Manitoba to 25,000. Of the latter number 15,000 were shipped west to the Territorial ranges and 10,000 to the United States. Half of the stockers sold in eastern Assiniboia were also exported to the States. It is pleasing to note that the export of stocker cattle to the United States is decreasing yearly. During 1898 three-fifths of the stockers sold in the Province of Manitoba went south of the line and the remaining two-fifths to Territorial points. The present season the cases were reversed.

The most notable event in connection with the cattle industry during the year was undoubtedly the outbreak of contagious mange upon the western ranges. The following circular issued by Dr. McEachran, the Chief Veterinary Inspector of the Dominion Department of Agriculture, explains the extent of the disease and the means adopted to prevent its spread.

The serious menace to successful stock raising in the Territories through mange being permitted to exist and extend among the herds, calls for more than ordinary measures being resorted to to arouse in the minds of the cattlemen a full appreciation of its importance.

I regret to learn from the most reliable sources that the disease exists in cattle owned in Alberta, from the boundary line as far north as Mosquito Creek, and from the Mountains as far east as this district extends. It also exists in the adjoining district of Assiniboia.

It is a mistake to suppose that this is a non-contagious disease. It is a true *scabies* or mange. It is becoming more prevalent since domestic cattle have been introduced upon the ranges in large numbers, because these cattle herd close together and hang around buildings and fences, and, by rubbing against them, readily transfer the *acari*, or their eggs, left on the wood by infected animals having previously rubbed themselves.

Many animals present a mangy appearance owing to irritation produced by lice: some also from feeding on coarse herbage. These conditions are easily distinguished from mange. In mange there is considerable irritation about the neck, root of the tail, and in bad cases it may extend over the whole body. By rubbing against fences, trees or rocks, the skin becomes abraded and sores form which become covered by thick scabs, the skin wrinkles and the hair falls off. As a result of this constant irritation they feed but little, become emaciated from want of sleep and rest, and thus are unable to live through the winter and many die.

The suggestion that every owner should bring his infected cattle to the home ranche for treatment, if carried out, would most assuredly perpetuate the disease, by infecting corrals, buildings and fences, as well as by direct contact with healthy animals; besides it would be a very troublesome and expensive method, nor could it be relied upon as effective, as it is well known that many cattlemen are at times not as careful as they ought to be. Clearly, mutual cooperation is the common sense way of dealing with it. I would suggest that the Stock Association assume the expenditure necessary for the erection of a dipping station on the most suitable location, where all mangy animals would be sent to be herded and dipped till cured. This would require the services of three or four men, say two months; the dipping vats and corrals would cost say \$300.00. No owner would object to pay a fair share of this necessary expense, rather than lose time and go to ten times more expense by attempting to dip them at home. It will be readily understood also that those who have no mangy cattle now should be the most desirous of stamping out this contagious disease, knowing that un-

less it is done their cattle must inevitably be infected sooner or later; consequently every cattle owner is interested and should contribute toward the expense.

Another reason why a general combined effort should be made now is, that this, being a contagious disease, quarantine measures must be enforced under The Animals Contagious Disease Act, the regulations governing which have been communicated to you by the secretary of the association as applied to sheep scab, and these apply equally to mange in cattle and horses, and you will readily see that such measures, if rendered necessary through the indifference of stockmen themselves, will be attended by very great inconvenience.

I trust therefore that you will attend the meeting called to consider this subject and arrange for the necessary preparations being made so that advantage may be taken of the round-up to collect into one herd every mangy animal on the range.

Considerable feeling existed throughout the country owing to the stringent regulations adopted in the way of quarantine. It is, however, expected that the measures taken will have the effect of greatly reducing the extent of the disease.

Some dissatisfaction has arisen in connection with the question of American "tramp cattle." It is alleged that, owing to the large number of Texas steers on the range in Montana, and the alarming prevalence of contagious diseases there, that the indiscriminate drifting backwards and forwards of Montana cattle, may at any time be responsible for the introduction of such diseases into our range. It is even positively asserted that the contagious mange above referred to owes its origin to American tramp cattle. Be this, however, as it may, it certainly appears advisable that measures should be adopted to obviate this breach of the Dominion quarantine regulations. It is a notorious fact that the Territories, or at least that portion thereof lying along the Milk River in South-eastern Alberta and to the south of the Cypress Hills and Wood Mountain, furnish a convenient grazing ground for stock belonging to Montana ranchers. It is even stated that some of these gentlemen, in order to avoid inconvenience, have the same brands recorded on both sides of the line, and are not very particular as to whether or not stock on this side of the line are bred here, when they are driven south, ostensibly as strays, for shipment to the Chicago market over United States railways.

North Assiniboia.—Reports from this district indicate a favourable year. The export from Yorkton alone was 6,000 head for the season of 1897-98; the present season's report indicates a considerable decrease, the number shipped being only 3,895. As cattle in this district are to a large extent stabled or shedded during the winter, much depends on the quantity of hay secured. Prospects for carrying stock through in good shape are exceedingly bright as fifty per cent. more hay was put up than in the previous season, many stockmen having obtained three tons per head. The hay, however, is not of as good a quality as that of last year. The consensus of opinion seems to be that in the easterly portion of the district stock have done exceedingly well. Some half dozen head of cattle near Saltcoats died during the summer, apparently from eating poisonous weeds; no details, however, are given. A few casualties from flies occurred in the Touchwood Hills country. Actinomyces makes its appearance now and again in this portion of the Territories.

Moose Mountain.—This being mostly a stocker district, the general increase would not be marked, but it is thought to be about seventy-five per cent. of the breeding stock. The weather was more favourable for haying than in 1897-98, and a little more than the usual quantity of hay of fair quality was put up. Cattle lost flesh somewhat while the October snow lasted, and were thinner than usual for the time of year. The grass did not cure well. The general health of cattle has been good.

Wood Mountain.—The losses on this range are reported to have been from five to six per cent. through accident and old age and are thought to compare favourably with losses in previous years. Wolves are said to be very bold and destructive. The increase has been about seventy per cent. of the breeding stock. There was a good deal more hay put up than formerly and of good quality. The grass did not cure well, but the cattle were in good shape to enter the winter. Some deaths occurred from symptomatic anthrax, but the general health of the cattle was good.

Maple Creek.—In this district the losses are estimated at five and a half per cent., which is over four per cent. less than last year and one and one half less than the year before. The calf crop is placed at sixty per cent, or three per cent. higher than last year, but five per cent. smaller than that of 1896-97. The quantity of hay put up was rather greater than last year, but owing to wet weather it was deficient in quality. The general opinion is that cattle were in better condition than usual at the beginning of the present winter and that the grass was fairly well cured. Many losses from wolves are reported and these animals are said to be increasing. At Crane Lake one man reports ten per cent. loss from these animals. The general opinion is strongly in favour of the payment of wolf bounty and ranchers are in many cases doubling the regular bounty as an additional inducement to those who make a business of hunting wolves. In many portions of the district cattle are enjoying good health, although in others mange and actinomyces are quite prevalent. Symptomatic anthrax is also said to be bad in some herds. In one case twenty out of a bunch of twenty-four calves are supposed to have died from this cause.

Medicine Hat.—The average loss on the range during the winter of 1898-99 was four per cent.; being about the same as that of the two preceding years. Most of the losses were amongst calves and dogies and were due to the backward spring. The calf crop compared favourably with that of last year, in spite of bad weather in the early spring, being estimated at about seventy-five per cent. of the total breeding stock. This exceptionally large average increase is, no doubt, due to the fact that all the smaller bunches throughout this district have been well looked after. The growth of grass being rank, rather more than the usual quantity of hay was put up, but much was damaged by rain. The herds were in first-class condition at the beginning of winter and are said to be still laying on flesh, and beef is going out in prime condition. The grass cured well and there is an abundance of good feed available. Heavy losses were caused by wolves, especially in the western and southern Cypress Hills range. A brown eagle is considered by some to be a very dangerous enemy of cattle; one rancher has offered a bounty of ten dollars for each bird destroyed in his vicinity. Symptomatic anthrax claimed a few victims amongst younger stock. The herds have been in good general health, although a small percentage of many cattle are scattered throughout the district.

High River.—The loss in stock cattle was about five per cent. which is about the average of other years. Including the loss of calves in the spring the percentage would be much higher, as some ranchers report loss of nearly all calves born in March, April and May; but as many are now keeping up their bulls at certain seasons of the year, the proportion of calves dropped in those months is decreasing. The calf crop shows a slight increase over that of the previous year, but is somewhat smaller than that of 1896-97, which was estimated at seventy per cent. While the increase on the

range was only fifty-four per cent. of the total breeding stock, it was fully seventy-five per cent. amongst domestic cattle. Although the usual quantity of hay was put up the quality of most of it was very poor owing to the continuous rains. Amongst the farmers the deficiency was supplied by the quantity of grain cut green. Cattle have entered the winter in good condition. The grass in the foothills has to some extent been frozen and beaten down, but the prairie grass cured fairly well, so that stock, aided by the very fine open weather of the early winter, will probably do well, especially in that portion of the district lying east of the Macleod trail. The losses from wolves on some portions of the range have been considerable. One rancher reports ten head of cattle killed in December. Three wolves were seen lately in the forks of the High River and are thought by some to be increasing in numbers. There is a feeling in favour of increasing the wolf bounty to ten dollars during the months of December, January and February, as it is then very difficult to kill them. A number of cases of mange, or buffalo itch, have been reported on this range. One of our best known cattle-men states "this disease has been on the range since 1892, but has caused little trouble. It is the fattest cattle that are affected and most of them get over it without treatment." There are also a few cases of actinomycosis and symptomatic anthrax.

Porcupine Hills.—Losses are reported as being all the way from two per cent. in small bunches, up to fifteen per cent. in some of the larger. The average is probably about seven per cent., which would be on a par with the previous year. The heaviest losses were in March from stormy weather, as was also the case in 1897-98. The increase in range cattle reaches about forty per cent. of the breeding stock, while in small herds the percentage has been nearly double that. Haying was much interfered with by wet and unfavorable weather, but owing to the fine fall the usual quantity of hay was put up; the quality, however, was necessarily not up to the average. Entering the winter in as good shape as was ever known, the cattle are holding their flesh well; although much of the grass was poorly cured. While the loss from wolves has been considerable amongst calves, dogies and colts, it is thought that the bounty is having a good effect. The general health of the cattle has been good, although mange exists to some extent, especially on the lower range. Some appear to think that the dipping has not been eminently successful as a cure. A few cases of symptomatic anthrax were reported and actinomycosis is particularly noticeable in eastern cattle and it is even thought to be on the increase.

Macleod.—Owing to the calves coming later in the spring, because of the growing tendency on the part of the ranchers to keep the bull herds under better control, the losses have been somewhat lighter than for several seasons past and would have been still smaller had it not been for the outbreak of mange, which occurred chiefly amongst cattle brought in during the previous fall and summer. The increase has been about fifty-five per cent., but the returns show that the rate is much smaller in large herds than in herds of moderate size where closer attention can be given to each individual head. It appears that somewhat less hay has been made than in previous years, and in accordance with the experience in other districts, the quality was much depreciated by rain. Stock are still in first class condition, better in fact than is usual at the beginning of winter, and there will probably be quite sufficient feed to carry them through, although the grass did not cure as well as usual on some parts of the range. A few

losses from wolves are reported in this range and a number of cases of symptomatic anthrax. A good deal of mange or scab was prevalent in the spring, especially amongst "dogie" (stocker) cattle, and some were still affected at the beginning of the winter although many had been dipped. Washing and brushing with dip is considered by some to be preferable to dipping. Otherwise the general health of the cattle has been good.

Pincher Creek.—The average percentage of losses for the year is computed as being a little over five per cent. and is generally thought to compare favourably with that of the previous winter. This is to some extent due to the keeping up of bulls during the early part of the season, which has also had a beneficial effect upon the calf crop, which averages about sixty-three per cent. of the breeding stock. As low as thirty-five per cent. has been reported from some bunches and as high as ninety per cent.; which latter no doubt was the result of better care. The tendency in this district appears to be to reduce the size of the herds to the limit which enables stockmen to devote more attention to each animal. About the usual quantity of hay was put up, but the quality was not as good as in former years. Following the practice of last season, a considerable quantity of hay was shipped for use in the mountains. There is much difference of opinion amongst cattle men as to whether the grass cured well or not, but there is no doubt that it is better on some parts of the range than might have been expected after the rank growth and wet weather of the past season. The losses from wolves are generally conceded to be smaller than in previous years. This is due largely to the energy displayed by the Stony Indians, stimulated by the bounty, in the way of hunting these animals. Complaints are made of losses from "two-legged" wolves. Mange is much too frequently seen, and is said to be the only disease amongst horned stock on this range. All kinds of stock have done well, the cattle market has been steady and the ranching industry is in a very prosperous condition here.

Lethbridge.—In this district the losses during the winter amounted to about eight per cent. while those of the previous two years were estimated at ten per cent. The increase this season shows an improvement of about thirteen per cent on that of previous years; being estimated at fifty-three per cent of the total breeding stock. In some herds the percentage runs as high as eighty-seven. The quantity of hay put up largely exceeds that of previous years, and the proportion damaged is small considering the volume of rain which fell during the early part of the season. Cattle were in first class condition in the fall, being in much better shape than for years past. The grass on the range cured fairly well, although towards the boundary early frosts did some damage. On some portions of this range wolves have done a great deal of damage and Indian dogs are also the subject of complaint. Mange is said to have been bad in the vicinity of the Pot Hole, and has caused the deaths of a number of cattle. At other points it is reported to have been pretty well stamped out. There have been the usual cases of actinomycosis and symptomatic anthrax.

Sheep River.—The general consensus of opinion seems to be that, although the losses were somewhat greater than last year, they would only reach about five per cent. The principal casualties were amongst young heifers in the spring, as the weather was very cold and wet. The increase is below that of the two previous years by five per cent. and is computed to be about sixty per cent. of the total cow herd. Like last year, the grass did not cure well on the western portion of the range. Although some have se-

cured more than the usual quantity of hay, a great deal of it is of very inferior quality. Cattle were in as good, if not in better condition to enter the winter than they have been for years. Slight losses occurred from wolves and a few from symptomatic anthrax. Actinomycosis is said to be on the increase. The general health has been good and the cattle business never was as prosperous in the district as at the present time.

Bow River East.—The losses during the winter were light, being about two per cent., and compare very favourably with those of the preceding year. The calf crop was very good, being estimated at about seventy per cent. of the total breeding stock, and was largely in excess of the previous year's increase, which, however, was phenomenally small. The sloughs being full of water, the usual quantity of slough hay was not put up, although the deficiency was largely made up with upland grass. A great deal of hay was damaged by wet weather. Cattle were in better condition for entering the winter, than for several years. Generally speaking the range grass appeared to have cured well. A few losses from wolves occurred along the Red Deer River, north of Gleichen, and some cases of symptomatic anthrax were reported. This disease was, apparently, more frequently met with than during the previous spring. The general health of cattle was excellent; mange was noticed to a small extent, but is now said to be stamped out.

Bow River West.—The losses in this district during the past winter reached a little over seven per cent., being somewhat heavier than usual, and principally caused by the late spring. The losses of past years have averaged about five per cent., while in individual cases as high as twenty per cent. of a loss is reported this year. The calf crop was largely affected by the unfavourable weather of the late spring and is generally considered to be from ten to fifteen per cent. below the average. The increase is estimated at about fifty-seven per cent. The usual quantity of hay was not put up and the quality was also greatly affected by the abnormally wet season. The opinion is freely expressed that last year's was the poorest hay ever put up in the district, but it is thought that it will prove sufficient, owing to the open winter and the excellent condition in which cattle entered the winter. Although the grass, in some portions of this district, was injuriously affected by an early frost and snow, it is fairly well cured, particularly in the eastern portion. Heavy losses are reported from wolves in the neighbourhood of Grand Valley, but not elsewhere. While cattle are mostly in good health, a few cases of symptomatic anthrax occurred. Foot-rot is also said to be somewhat prevalent. Actinomycosis is apparently on the increase, and is common amongst the dogie cattle.

Calgary North.—Less than two per cent. covers the loss in this district as most people feed their cattle through the winter here and provide them with the necessary shelter. The proportion of increase would be about eighty-five per cent. in the northerly part of this district and about fifty-five in the southerly, where range conditions and methods prevail. Considerably less hay than usual was put up owing to the wet season and the full sloughs. A great deal of hay was damaged, but this will be largely offset by the amount of grain cut green, which is available for feed. Cattle have entered the winter in excellent condition; in fact, some people maintain that they were never in better shape. Although the grass on the prairie to the south and east is said to be fairly well cured, the reverse is the case throughout the north, but no great dependence is placed on the range for winter feed. Some cases of hoof-rot were reported north of the Bow

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River and actinomycosis was somewhat prevalent among dogie cattle. Otherwise, with the exception of a few deaths from symptomatic anthrax, the cattle are reported as having enjoyed good health during the past year.

IMPORTATION OF PUREBRED STOCK.

Arrangements were made, under your direction, for the importation of purebred bulls into the Territories during the past year. As anticipated, a great number of applications were not received, owing to the fact that the offer of the Department was of such a nature as to be of very little advantage to men ranging large herds, while those owning small bunches of breeding cattle, to whom the scheme principally appealed, were frequently unable to purchase purebred males, however anxious they might be to improve their stock. Forty-eight bulls were shipped in under this arrangement. Twenty were consigned to points in Assiniboia, three went to Saskatchewan, three went to Southern Alberta and twenty-two were consigned to Northern Alberta. The average cost per head of bringing in these bulls was \$19.40. Undoubtedly, animals shipped at earload rates and consigned to one point could be laid down much cheaper, but when it is considered that the forty-eight animals were brought in and distributed to twenty-eight different points in the Territories, in most cases involving payment of shunting charges or local shipment, it will readily be understood that the cost of transportation per head would necessarily be in excess of earload rates.

It was, of course, never the intention of the Department to come into competition with legitimate breeders and importers of live stock. It was felt that at a great many minor points, particularly along the branch lines throughout the country, full earload lots of purebred bulls could not be disposed of, and a large number of settlers were, therefore, face to face with the necessity, either of doing without a superior male to head their herd, or of paying ruinous charges for having such an animal shipped to their nearest station. A case came incidentally to the notice of the Department where an animal had been shipped with a carload of purebred stock from Eastern Canada to Calgary, and reshipped at local rates to a point on the Calgary and Edmonton railway, at a cost of \$36.00 for freight, shunting and other charges, laid down at its destination. As the records indicate that the larger number of the bulls brought in under Government auspices, during the past year, were for persons owning from ten to twenty head of breeding stock, there can be no doubt that the action of the Department in undertaking the transportation of single animals at a nominal rate per head was largely instrumental in placing superior bulls with a class of stockmen who would not otherwise have been able to obtain them. An effort is now being made by the Department to induce the transportation companies to furnish better facilities for the interchange of purebred bulls in the Territories and it is hoped that arrangements may be made during the coming season to assist local breeders of purebred stock in the way of cheap transportation from point to point in the Territories.

During the past year the Canadian Pacific Railway Company evinced a desire to assist in the improvement of stock in the North-West Territories and Manitoba, and finally decided upon the free distribution of purebred bulls and boars. Considering that the time was opportune for approaching the Company in order to induce it to co-operate in carrying out our useful work, negotiations were entered into with the management of the Company

under your direction, with the result that a concession was obtained to the extent of free transportation, under certain restrictions, for eight carloads of bulls for the coming season from Manitoba and Ontario to points in the Territories. This concession involved, of course, a number of important modifications in the arrangements between this department and the Ontario Government, which has in the past taken entire charge of the organisation in Ontario of our bull shipments. After the necessary understanding had been arrived at, the following memorandum was issued from the Department :

I am directed to call your attention to the importation of purebred bulls, under Government auspices, which will be carried on under an arrangement with the Canadian Pacific Railway Company, whereby the bulls (which must be delivered at some convenient point on the said railway in Manitoba or Ontario), are gathered and forwarded by carload lots to the west in charge of a reliable man and distributed at desired points upon the C.P.R. main line or branches in the Territories. The Government and Railway Company defray all expenses over and above the sum of \$5.00 per head, which must be deposited by the applicant. As soon as parties are in a position to make application to the Department for the transportation of stock, blank forms will, upon notification, be supplied them, which are to be filled out and returned to this Department, accompanied by the sum of \$5.00.

Stockmen availing themselves of this offer will have to make their own arrangements, through friends or otherwise, regarding the purchase of their bulls. If, however, a person is selected by a sufficient number of applicants to purchase a full carload of bulls for them, he will be furnished free transportation to Manitoba or Ontario and return in charge of the car. His incidental expenses up to the time of taking charge of the stock in the east, must be defrayed by himself or the parties he represents. If intending purchasers are unable to make either of the above arrangements, they will, upon application to the Department, be placed in communication with the Live Stock Associations of Manitoba or Ontario, who will purchase for them what stock they require for a nominal commission.

It is not necessary for applicants for transportation of stock under this arrangement to make their purchases in the east prior to filing their applications with the Department. If anyone desires to obtain the reduced rate in question, he should file his application at once, and he can then purchase what stock he requires in the east, at his convenience. As the shipment will not take place until May next, there will be ample time to complete such arrangements.

As above indicated, only male stock can be accepted for transportation under the arrangement outlined, and no more than two head can be shipped to any one applicant at the \$5.00 rate. The Department will, however, be able to arrange for the transportation of purebred female stock in less than carload lots, on the understanding that applicants pay the full cost of transportation. All stock will be accepted for transportation at owners risk only; but every precaution will be taken to ensure safe delivery.

As the number of bulls which it is intended to bring into the Territories during the coming spring under the foregoing scheme is at present limited, applications will be considered in this Department on a basis of priority.

The same system as was in vogue last year will be adopted for the coming year's shipments, namely the filing of purchaser's and breeder's declarations in connection with each application, setting forth that the person importing the bull or bulls is a *bona fide* resident of the North-West Territories, owns a sufficient number of female stock and that the animal proposed to be imported is of pure breeding.

It is expected that the five dollars deposited by each applicant for the transportation of a bull, will pay all incidental expenses, such as fitting of car, attendance and feed *en route*. This will enable the Department to carry on the good work of improving Territorial herds on a larger scale than ever and without any expenditure of public funds.

Shortly after the arrangements above referred to had been made public, considerable agitation took place in the ranks of the purebred stock breeders of the Territories. It was held that the action of the Department interfered seriously with their sales, and that there was an element of injustice to them in adopting measures facilitating the importation of pure-

bred sires into the country. The free distribution of purebred males by the Canadian Pacific Railway Co. had the effect of bringing these complaints to a head. The matter was ventilated through the press, and the purebred stock breeders associations of Manitoba and the North-West Territories adopted strong resolutions condemning the action of the railway company. It is a great pity that however beneficial any scheme may be, it is bound to mete out injustice to and antagonize certain classes of the community. Sight should not, however, be lost of the fact, that the Canadian Pacific Railway Company only made an attempt to adopt, in part, the policy which has for several years been pursued by railway companies in the Western States. The modern, up-to-date railroad is not satisfied with merely performing the functions of a common carrier. Acting on the presumption that a prosperous community makes a prosperous railway, great activity is exhibited in encouraging, to the very utmost, branches of farming suited for the different districts served by its system. In many cases poultry agents, dairy superintendents, commercial agents, buyers and other officials, apparently not required in the regular operation of railways, are employed in connection with the educational and industrial work of these railways. It will, therefore, be seen, that the Canadian Pacific Railway Co. only followed in the footsteps of southern competitors. Whether, however, the policy of free distribution, adopted by the Company, was a commendable one or not, it does not materially affect the principle involved in the encouragement of live stock improvement, and any arguments in favour of this field being entered by a transportation company, will necessarily apply with tenfold force in favour of vigorous action along the proper lines on the part of a department of the Government specially charged with organising work having in view the best interests of agriculture. In any event the view of some purebred stock breeders, that the introduction of purebred bulls, whether distributed free, or brought in at a cheap rate, will have a tendency to diminish sales does not appear to rest on a sound foundation. The measure is more or less an educational one, and once a stockman has been induced to use a purebred bull, he is not ever likely to revert to the scrub again. If this is admitted, it stands to reason that the action of this Department as well as that of the railway company in the way of assisting settlers to procure purebred bulls, must of necessity have a beneficial effect upon the purebred stock industry of the North-West Territories, inasmuch as it will stimulate and increase the demand for purebred males in years to come; not to mention the effect of superior sires upon the herds from a financial point of view, enabling stockmen, through enhanced profits, to purchase such animals, who might not otherwise have been in a position to do so.

STOCK INSPECTION.

The stock shipping season had hardly commenced before the new Stock Inspection Ordinance came into force (on the first of July), and practically all the work performed by local inspectors during the year was under the provisions of the new Ordinance. The following is a copy of the instructions under which the stock inspection work of the Territories was carried out:

I beg to inform you that you have been appointed a stock inspector under the Ordinance in that behalf, which comes into force on the first of July next. I am sending you a copy of The Stock Inspection Ordinance, a supply of blank forms of certificate and carbon paper, a cardboard spring clip and an advance copy of The North-West Brand Book, which will be supplemented with periodical lists of brand allotments and transfers.

Under the new Ordinance the principle has been adopted that one stock inspector only is to act for each shipping point, who will be held responsible for the proper inspection of all stock shipped therefrom. You will notice that you have the power to appoint one or more deputy inspectors. If you are at any time unable to inspect any particular shipment or find it necessary to be absent from home for any length of time, you should appoint a deputy under Section 4 of the Ordinance to look after your duties for you. The appointment of such deputy or deputies must be made in writing over your signature.

As you are no doubt aware, the Canadian Pacific Railway Company has issued instructions to its agents throughout the country not to accept cattle for shipment without the production of an inspection certificate. Such being the case, it would be advisable that a copy of such certificate should be handed to the railway agent by you in connection with all shipments leaving the point for which you are responsible. It would also be well that a copy of the said certificate should be sent to the secretary of The Western Stock Growers' Association, at Macleod, who will, no doubt, furnish you with envelopes properly addressed and stamped for that purpose. The object of supplying you with carbon paper is, that you may place a sheet of this between two forms of certificate and when making out the original and duplicate thereof in pencil (preferably an indelible pencil) you are able to make four copies and thus avoid additional clerical work. The duplicate portion of the form is, as indicated thereon, to be mailed to this Department on or before the tenth of December in each year.

You will notice that Section 6 calls for inspection before shipment of stock. The term "stock" includes horses and also stocker cattle for shipment from one portion of the North-West Territories to another.

Section 7 of the Ordinance provides that, before any Inspector shall issue a certificate, the shipper must produce a memorandum of sale from the person who is the recorded owner of the brand on such stock, consenting to the shipment of the stock. You will, no doubt, be confronted with cases where animals bear more than one brand. The production of a bill of sale or written consent, signed by the owner of any one of the brands found upon such animals, should be considered sufficient guarantee that the animals in question are being legitimately shipped. It is also provided, under subsection 2 of the Ordinance, that where cattle bear the recorded brand of the person in whose name they are shipped, a memorandum is to be furnished the inspector, signed by such owner or his agent, setting forth the age, sex and brands of each animal.

Section 9 provides that the bill of sale, written consent or memorandum required under Section 7 is to be cancelled by the inspector, who shall retain the same and attach it to the duplicate certificate, which is to be forwarded to the Department at the end of the shipping season, unless such document covers more animals than those about to be shipped; in which case the Inspector is to endorse upon it the fact that a certain number of the animals included in the document have been shipped, and when the balance of the said animals are finally inspected for shipment the document will be taken up by the Inspector in the usual manner and cancelled.

If, after perusing the Ordinance carefully, there should be any other point upon which you desire further information, kindly communicate at once with this Department.

As the provisions of The Stock Inspection Ordinance are somewhat complicated and instructions on the subject, therefore, liable to misinterpretation, and owing to the rather superficial manner in which the work had been conducted during the previous year, when very little supervision could be given it owing to the recent organisation of the Department, I visited the stock inspectors at the most important shipping points in the Territories during the month of August and spent some time with each, explaining the provisions of the law and the manner in which the Department desired it carried out. I am pleased to be able to state that, contrary to expectations, very little friction was engendered in administering this Ordinance during the year and that the provisions of the law were, on the whole, enforced in a thorough and satisfactory manner.

A few complaints were received early in the season to the effect that some inspectors displayed carelessness in reading the brands upon animals being shipped, in fact, cases were brought to the attention of the Department where animals had been inspected after having been loaded into the cars. Every complaint was, however, carefully investigated and in the majority of cases a reasonable explanation was forthcoming in extenuation of such apparent negligence on the part of inspectors.

Early in the season it came to the notice of the Department, that a few shipments of cattle had left the Territories without inspection; presumably owing to a misunderstanding on the part of one or two of the inspectors. A circular was forthwith issued to all inspectors calling their attention to the fact that this Department was ready to bear the cost of prosecution where such breaches of the law occurred. The result was that a few prosecutions were made and convictions obtained in every case.

The Department is greatly indebted to the Canadian Pacific Railway Company and the Manitoba & North Western Railway Company for materially facilitating the enforcement of the provisions of the law. Immediately after the passage of The Stock Inspection Ordinance these companies agreed to notify their agents within the Territories, not to issue contracts for the shipping of live stock without the production by the consignor of the statutory stock inspection certificate. This arrangement naturally rendered it impossible to send cattle out of the country by rail without inspection, and the successful administration of the law during the year was chiefly due to this action of the railway companies. A few cases occurred where agents permitted stock to be shipped without the production of a certificate, but these were immediately brought to the attention of the general freight agents of the companies at Winnipeg and the parties were promptly reprimanded.

The following is a schedule showing the result of the inspection work performed at each point within the North-West Territories during the past year :

STOCK SHIPMENTS.

SHIPPING POINT.	NAME OF INSPECTOR.	Exports East.		Exports West.		Shipment in N.W.T.		TOTAL.	
		Cattle	Hor.	Cat.	Hor.	Cattle	Hor.	Cattle.	Hor.
Fleming	L. Galbraith	22	6	.....	.....	5	.....	27	6
Moosomin	Robt. Stewart	745	2	.....	1	335	1	1,080	4
Whitewood	Wm. Gemmel	696	.....	.....	.....	18	.....	714	.....
Broadview	Jos. Brannan	18	2	.....	.....	68	.....	86	2
Grenfell	John S. Dickson	134	.....	.....	.....	223	.....	357	.....
Qu'Appelle	Jas. A. Lidgate	1,011	.....	.....	.....	334	.....	1,335	.....
Balgonie	J. R. Agar .....	.....	.....	.....	.....	2	.....	2	.....
Langenburg	Chas. M. Lange	215	.....	.....	.....	.....	.....	215	.....
Churchbridge	B. D. Westman	159	.....	.....	.....	.....	.....	159	.....
Saltcoats	B. Smithette	610	.....	.....	.....	.....	.....	610	.....
Yorkton	T. V. Simpson	3,895	.....	.....	.....	.....	.....	3,895	.....
Weyburn	Wm. Hunt .....	.....	.....	.....	.....	174	.....	174	.....
Estevan	John Ellis	45	.....	.....	.....	.....	.....	45	.....
Alameda	A. R. Hooper	323	.....	.....	.....	.....	.....	323	.....
Oxbow	W. Greer	93	16	10	.....	.....	.....	103	16
Gainsborough	Ben. Burk	7	.....	.....	.....	.....	.....	7	.....
East Assiniboia .....	.....	7,973	26	10	1	1,159	1	9,142	28
Dundurn	Chas. E. Goode	845	.....	.....	.....	44	.....	889	.....
Regina	G. M. Webb	372	18	.....	.....	.....	.....	372	18
Moose Jaw	H. Whitmore	974	.....	.....	.....	106	.....	1,080	.....
Rush Lk., Swift	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cur. & Gull Lk.	W. Milburn	1,073	.....	.....	.....	484	.....	1,557	.....
Crane Lake .....	.....	19	.....	.....	.....	.....	7	19	7
Maple Creek	W. A. Douglas	4,116	62	170	10	305	118	4,591	190
Medicine Hat,	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stair and Walsh	J. H. G. Bray	3,530	373	.....	.....	1,639	48	5,169	421
West Assiniboia .....	.....	10,929	453	170	10	2,578	173	13,677	636
Olds	Wm. Dean .....	.....	.....	55	.....	.....	.....	55	.....
Innistail	Cst. Hetherington, NWMP.	.....	.....	.....	.....	21	.....	21	.....
Red Deer	A. B. Nash	369	.....	.....	.....	.....	.....	369	.....
Lacombe	A. M. Burdick .....	.....	.....	.....	.....	382	.....	382	.....
Ponoka	do. ....	.....	.....	.....	.....	43	.....	43	.....
Wetaskiwin	J. E. Miquelon	199	.....	.....	.....	140	.....	339	.....
Edmonton	Wm. R. Howey .....	.....	.....	.....	.....	30	.....	30	.....
North Alberta .....	.....	568	.....	55	.....	616	.....	1,239	.....
Gleichen	Sergt. Brooke	1,016	73	40	.....	104	.....	1,056	177
Calgary	R. A. Janes	1,255	133	3,416	95	25	184	4,696	412
Cochrane	W. B. Elliott	1,926	.....	51	.....	213	.....	2,190	.....
Morley	F. Ricks	295	.....	.....	.....	.....	.....	295	.....
Okotoks	J. Paterson	84	.....	.....	.....	.....	.....	84	.....
High R. & Cayley	Wm. H. Todd	1,028	45	980	18	713	320	2,721	383
Clareholm	Chas. Sharples	1,332	154	460	.....	974	222	2,766	376
Macleod	R. G. Mathews .....	.....	410	74	.....	2	325	76	735
Pincher Creek	J. Herron	2,503	121	840	89	508	.....	3,851	210
Lethbridge	Thos. Scott	3,656	315	45	.....	312	.....	4,013	315
South Alberta .....	.....	13,095	1,251	5,906	202	2,747	1,155	21,748	2,608
Prince Albert	Wm. Plaxton	1,603	.....	.....	.....	116	.....	1,719	.....
Saskatoon	D. W. Garrison	1,162	.....	.....	.....	.....	.....	1,162	.....
Saskatchewan .....	.....	2,765	.....	.....	.....	116	.....	2,881	.....

DISTRICTS.	Exports East.		Exports West.		Shipment in N.W.T.		TOTAL.	
	Cattle	Hor.	Cat.	Hor.	Cattle	Hor.	Cattle.	Hor.
Eastern Assiniboia	7,973	20	10	1	1,159	1	9,142	28
Western Assiniboia	10,929	453	170	10	2,578	173	13,677	636
Northern Alberta	568	.....	55	...	616	.....	1,239	.....
Southern Alberta	13,095	1,251	5,906	202	2,747	1,155	21,748	2,608
Saskatchewan	2,765	.....	.....	.....	116	.....	2,881	.....
The Territories	35,330	1,730	6,141	213	7,216	1,329	48,687	3,272

HIDE INSPECTION.

On the first day of July, when the new Stock Inspection Ordinance came into force, the system of hide inspection in vogue under the provisions of The Brand Ordinance, was abolished. Below will be found a statement showing the number of hides inspected from the first of January up to the repeal of the law on the first of July :

DISTRICT	INSPECTOR	POINT	NO. OF HIDES	TOTAL
West Assiniboia.....	G. M. Webb.....	Regina.....	134	
do	W. Milburn	Swift Current	12	
do	W. A. Douglas.....	Maple Creek.....	45	
do	J. H. G. Bray.....	Medicine Hat.....	285	476
East Assiniboia	W. B. Smithette..	Saltcoats.....	9	9
North Alberta.....	A. M. Burdick.....	Lacombe.....	11	11
South Alberta.....	G. H. Wheatley...	Blackfoot Agency..	163	
do	Howell Harris	Lethbridge.....	160	323
The Territories.....	.....	.....	.....	819

The new ordinance provides for the keeping of certain records by butchers and persons dealing in hides. Any person killing cattle is also compelled to keep the hide for a period of thirty days and produce it for the inspection of any person upon the order of a justice of the peace.

As the fees for punching hides were abolished, it was not anticipated that the Department would be able to provide for the inspection of butchers records through the medium of stock inspectors. A communication was, therefore, addressed to the Commissioner of the North-West Mounted Police requesting that the members of that force should be charged with the enforcement of the provisions of the Ordinance dealing with the manner in which such records are to be kept. On the twenty-ninth of August the Department was advised that the necessary inspection would be performed by the members of the said force at irregular periods but at least once a month.

HORSES.

MARKETS.—The past year has been remarkable for the upward tendency in prices of nearly all classes of horses. An average price of \$108 per head on 113,000 horses was realised at the Union Stock Yards, Chicago. The highest prices were reached during July, August and September, when the reported sales reached an average of \$161.50 per head.

As might have been expected the outbreak of hostilities in South Africa had a very decided effect on the market. A large number of horses belonging to the tranway and omnibus companies in Liverpool, London and Manchester were requisitioned, under the system in vogue in Great Britain, where the War Office has, during the last ten years, been paying a bonus to horse owners for the privilege of using the subsidised horses for active service at any time. Consequently, these concerns have had to replace the horses requisitioned for the army, which has in turn created a great improvement in horse values all over the world.

The year of greatest production in horses was undoubtedly 1893. As the demand for export horses is almost entirely confined to five-year-olds, the 1893 crop was consumed during 1898. It does not require any very great foresight to predict a very material increase in the value of horses within the next year or two, seeing that the present demand is wholly unprecedented, and that the colt crop of the years of lowest production will have to be drawn on in the immediate future to meet this large demand. There can be no doubt that the present Transvaal campaign has conclusively demonstrated the value of mobility in handling troops and that the immediate effect will be an effort on the part of nearly all European powers to mount a very large portion of their infantry. This would create a demand for horses which, under present conditions it would be absolutely impossible to meet.

A remarkable feature of last year's horse business was the sale of 8,000 western branded horses at the Union Stock Yards, Chicago. In the past these animals had been a drug on the market and could hardly be disposed of at any price. Some of the consignments above referred to realised from \$30 to \$75 unbroken, while a few which had been broken to harness sold for from \$100 to \$125. Branded draft horses brought as high as \$175 per head.

It seems curious that eastern buyers of light horses have not in the past been represented in the Territories. A few carloads of horses were purchased by a responsible Toronto firm some years ago, but whether they could not secure the proper class of horses, or whether they could not be obtained in sufficient number, the experiment was not repeated. It would be well if the Territorial horse breeders organised with a view to co-operation for the purpose of finding a satisfactory outlet for their stock. If one or more horse breeders' associations were organised which could keep in touch with all the breeders and organise periodical sales, thoroughly advertised in the United States and Eastern Canada, it is very probable that outside buyers would speedily become interested, and arrange for regular attendance at these sales. Distances are great in this country, and it is quite certain that horses cannot now be purchased cheaply enough to warrant buyers in travelling through the country at great expense and loss of time to gather together sufficient horses to make up carloads. If the exact date of such sales were known a long time beforehand, it would also give horse-breeders an opportunity of getting their horses in and have them properly handled and put into the shape the market demands.

IMPORTATIONS.—Some statistics have been gathered from the various customs ports and transportation companies and it was found that during the fiscal year terminating on the first of July, 1899, 10,525 horses, representing a total value of \$300,000 or \$27.60 per head, were imported into Manitoba and the North-West Territories from the United States; exclusive of the very large number of such horses entered by actual settlers.

About half of these animals were disposed of in Manitoba and Eastern Assiniboia; the balance went to Western Assiniboia and Alberta. Some 2,000 heavy draft horses were imported from the eastern provinces during the year. There is ample food for reflection in these figures.

During the year the Federal Department of Agriculture decided to enforce the veterinary inspection clause in connection with the importation of horses from the United States. Importers of horses from that country will therefore, have to pay the inspection fee, which, however, is refunded by the Federal Government in the case of settlers' horses. It is not likely that this will affect in any considerable degree the importation of horses from that source. It is a great pity that this country should be flooded with a class of horses already too well represented. There is, however, an element of comfort in the increasingly large home demand for horses in the United States, which renders it more than probable that this objectionable addition to our horse stock will not be further augmented during the next few years.

BRANDING.—There can be no doubt whatever that Territorial breeders will not reap the full benefit of the revival of the horse market until some method of ranging horses has been adopted which will largely obviate the necessity for branding; or some system of branding or ear-marking invented which will furnish a safe means of identification and at the same time not blemish a horse to the extent of an unsightly burnt shoulder or thigh brand. The presence of a brand upon a horse, is, in the eastern market looked upon, not alone as a blemish, but as a certificate of uncertain temper and general unreliability. Horses in every respect equal to the Ontario bred animals, even if thoroughly well broken, cannot be sold for any sort of a reasonable price if they bear the fatal brand.

REMOUNTS.—In the Departmental report of 1898 I took occasion to deal rather lengthily with the question of a remount depot for the imperial army at some point in the Territories. Admitting that the climatic and soil conditions here are such as to be favourable to horse raising—and I have yet to hear of any objections being urged against them—it appears curious that agents from Great Britain should be scouring the United States for suitable horses for army purposes—which has been done for some time—and make no attempt whatever to purchase in Canada. Horses for South Africa have been obtained in the United States at prices ranging from \$100 to \$125 and in a few cases as high as \$150 has been paid. If a horse suitable for the service has not been raised here, in very large numbers, in the past, the reason is not that the country or the breeders are incapable of producing this animal, but simply that owing to the small demand for such horses, which has practically been limited to the dozen or two chargers required annually by the North-West Mounted Police, the breeders of the west have not felt justified in paying special attention to producing them. The idea that the proper horse cannot be raised is entirely erroneous. I am, however, pleased to state that a movement is now on foot to urge the establishment of a remount depot in the west. Considerable correspondence has passed during the year between this Department and Major General Hutton on the subject, and there is every reason to believe that the War Office would favourably entertain the proposition providing reasonable assurance could be given to the effect that our horse breeders would enter into the matter in a spirited manner and endeavour to produce the class of horses required. The following resolution passed at a meeting of directors of the Horse

Breeders' Association of Manitoba and the North-West Territories, is of special interest:—

That, owing to the rapid development of the horse breeding industry in Western Canada, and the suitability of a large proportion of the horses bred in the west for cavalry purposes, we should take steps to impress upon the Imperial authorities the advisability of establishing a remount purchasing depot at Calgary or Regina and a branch depot at Winnipeg. Horses could be thoroughly broken and trained at these points and shipped at short notice to any part of the world where they might be required.

The British Isles are, without doubt unable to furnish a sufficient number of horses suitable for army purposes; and as, in the event of a serious war, horses would certainly be declared contraband, it is of vital importance that an ample supply should be obtainable within the Empire.

The establishment of such depots would undoubtedly be of great advantage to the Canadian West, by furnishing a profitable market for the immense numbers of horses which can there be raised more cheaply and successfully than in any other part of the world.

It is hoped that the association will receive the hearty co-operation of every person interested in horse breeding in the North-West.

HORSE BREEDERS' LIEN ORDINANCE—Very few registrations were made under The Horse Breeders' Lien Ordinance during the past year. The law went into effect at too late a date, and very few stud horse owners were acquainted with the provisions thereof. That legislation such as this was badly required, is quite clear from the fact that three quarters of the applications received by this Department for the registration of stud horses have had to be refused owing to bogus pedigrees. No doubt stallion owners will avail themselves of the protection of this Ordinance as soon as they realise the scope of it.

STUD IMPORTATIONS.—The most serious feature of the depreciation in the value of horses during recent years was the almost absolute cessation of the importation of new blood. Service fees ranged low and stockmen did not feel justified in paying large prices for stallions. The past year has not been remarkable for the importation of high class sires. It is, however, hoped that the coming year, in view of the promising condition of the horse industry at the present time, will see a large influx of valuable stallions.

SHEEP.

The mutton market during the past year was everything that could be desired. Mining developments in the Kootenay district have created a large demand for mutton, and Territorial flockmasters are consequently reaping the benefit of high prices and ready sales. The same encouraging outlook does not, however, exist for wool. Owing to the causes explained in the report of 1898, namely, an excessive production of coarse wools, the prices have not been satisfactory and the most disappointing feature of the situation is that there is no likelihood of any immediate relief. While the prices for coarse wool have ranged low, the outlook for the finer grades of wool is decidedly encouraging. It is of interest to note that the Australian flockmasters are devoting more and more attention to improving the fleece of the native sheep by crossing with imported Merino and Delaine rams of the very finest breeding.

The sheep industry in the Territories has been largely reduced to the point where flocks of sufficient size must be kept to stand the expense of continual herding. This, of course, is a regrettable position of affairs. It is a matter for the consideration of those persons who wish to run small flocks, whether it would not be a paying investment to enclose a limited area of land with coyote-proof fencing. Various styles of

woven wire fences are being manufactured, the high cost of which, however, stand in the way of their general introduction. The material required to enclose an area of forty acres with ten strand fencing, 45 inches high, and with the stays sufficiently close to keep out coyotes, would cost from \$150 to \$200 landed at Territorial points. The cost of erecting these fences, however, is smaller than that of the ordinary wire fence, posts being placed from forty to sixty feet apart. The annual interest on such an outlay would not, of course, be a very serious item, but the difficulty is that a great number of our farmers have not as yet the capital available for that class of improvements.

In connection with the pasturing of sheep on limited areas may be mentioned the advisability of breaking up a portion of such enclosures and raising thereon some suitable pasture crop such as rape, alfalfa, green oats, or wheat and oats, or seeding down the whole enclosure to permanent grasses such as *bromus inermis* or timothy. Investigations made to ascertain the carrying capacity of sheep enclosures containing partly cultivated areas, conducted in the States, brought out the fact that ten acres of alfalfa sustained and fattened a hundred sheep during a summer. Rape is also a valuable forage plant for sheep, and will grow anywhere in the Territories.

During the past season an attempt was made to obtain statistical information as to the extent and importance of the sheep industry of the Territories. With this end in view a list of names was obtained, from local sources, of all sheep breeders in the Territories, and a circular letter was sent to each in which he was requested to furnish certain information respecting the number of sheep owned, the breed of rams used, the weight per fleece of the 1899 wool clip, price received therefor, percentage of increase and loss and such other general information as would be of interest and value. The following statement shows the result of our efforts:

DISTRICT.	NO. OF EWES.	NO. OF MALES.	NO. OF LAMBS.	TOTAL NO. OF SHEEP.	TOTAL NO. OF FLOCKS.	AVERAGE WEIGHT OF FLEECE.	AVERAGE SIZE OF FLOCK.
						lbs.	
Eastern Assiniboia	7,850	1,839	4,533	14,222	194	8 1-6	73.3
Western Assiniboia.....	95,232	53,533	35,235	184,000	35	6	5,257.0
Southern Alberta.....	14,184	8,946	6,240	29,370	32	6 $\frac{2}{3}$	917.8
Northern Alberta	2,477	1,664	1,288	5,429	88	7 $\frac{2}{3}$	61.7
Saskatchewan	1,479	208	813	2,500	62	8	40.3
The Territories.....	121,232	66,190	48,109	235,521	411	7.29	573

EASTERN ASSINIBOIA.—Most of the sheep in this district are held by farmers in quite small flocks. There are, however, a few fair sized bunches managed under ranching conditions along the line of railway south-east from Moose Jaw and in the Moose Mountain. Some farmers are disposing of their sheep, as their flocks are too small to stand the expense of herding. It is nevertheless generally recognised that few branches of farming are more profitable than sheep raising. Sheep on the summer fallows would to a large extent solve the weed problem.

The lamb crop was somewhat better than last year notwithstanding the bad weather at lambing time. The flocks show an increase of about fifty eight per cent. on the females. The average weight of fleece of the 1899 wool

clip went slightly over eight pounds, and is a few pounds heavier than in other districts owing to the preponderance of long woolled sheep in this portion of the country. This would appear to be a slight improvement on last year.

The Leicesters and Shropshires are about equally represented, and are greatly in excess of other breeds. The preference seems to be in favour of rams of the latter breed. A few Southdown, Cotswold and Oxfords are also used. Here, as elsewhere in the Territories, flockmasters claim that good blood is somewhat difficult to procure at reasonable figures. The price paid for wool has ranged from five to twelve and a half cents, which is about twenty per cent. below the price paid in 1898.

Spear grass has proved quite injurious. One butcher reports having found two dozen seeds of spear grass under the skin of a sheep. No contagious diseases appear to have been prevalent and the general health of flocks was good.

WESTERN ASSINIBOIA.—In this district, which is almost entirely devoted to sheep raising under ranching conditions, the increase is reported to have been from ten to twenty-five per cent. less than that of the previous year. The unfavourable weather during the early part of the lambing season is chiefly responsible for this loss. Some of the ranchers lost from one to four hundred lambs in one snow-storm, which lasted several days. The wool clip was about equal to that of last year and the price secured was from eight to ten and a half cents, according to quality.

In seventy-five per cent. of the flocks, Merino was the original stock, which has, however, been crossed with Cheviots, Shropshires, Oxfords, Cotswolds and Southdowns. Reports show that the various breeds are represented in the stock rams in the following proportion:—Cotswold, Merinos and Cheviots, sixteen per cent; Leicesters, twenty per cent.; Shropshires, twenty-four per cent.; and Oxfords, forty per cent.

Spear grass has been somewhat troublesome on account of the wet season and foot-rot was fairly prevalent. Some flockmasters assert that this disease is not identical with its Scotch namesake, as it disappears in the winter. It is said to yield readily to treatment with bluestone.

Some casualties occurred in Medicine Hat and Maple Creek flocks from eating poisonous weeds. At the latter point seventeen head died in thirty-six hours. Larkspur is supposed to have been the cause.

SASKATCHEWAN.—Sheep raising is not followed to any large extent. The increase for the year is reported to have been a little better than that of the previous year. At the end of the year, however, the lambs in the farmers' hands only numbered about fifty-five per cent. of the total females.

The weight of fleece for the year averaged eight pounds, and is slightly heavier than that of 1898. Prices of wool ranged from five to fifteen cents which is a little higher than that of the year before. The rams used are principally the Shropshire breed, but new blood is badly needed.

Spear grass has been troublesome, and many complain of losing lambs by "mumps." One farmer states that for three years he lost every lamb from this cause.

NORTHERN ALBERTA.—In that portion of Alberta lying north of Olds the increase in the flocks, although better than last year, was reported as only fifty-two per cent. of the females. The tendency has been to sell the lambs rather than to rear them to maturity, as high prices have been offered. The weight per fleece averaged somewhat better than that of

1898, reaching seven and one-half pounds. The market for wool being purely local, prices have been very irregular, depending largely upon whether the transaction was on a cash or a trade basis, and ranging from five to sixteen and one-half cents per pound. The value of wool was about the same as the previous year.

In this district the sheep are grades of all breeds, with a much larger proportion of the longwools than is found on the range. The Shropshire is, however, the favourite, though a large number of Leicesters are also used. Some flockmasters complain of a great scarcity of pure blood and difficulty in securing good rams. It is, however, a notorious fact that Territorial sheep ranchers are unwilling, as a rule, to pay as high prices for home bred sires as are readily obtained in Eastern Canada. Purebred Shropshires are bred in this district and doubtless the breeders find it difficult to dispose of their rams at remunerative prices.

The losses in this district were chiefly due to early lambing and coyotes. Some farmers north of Edmonton state that they have abandoned the keeping of sheep on account of a fatal disease causing lumps in the throats of lambs. Some cases of symptomatic anthrax were reported, and a few of scab and catarrh, but the general health of sheep was good. An Old Country shepherd remarks that he never had better lambs in the best sheep district of England.

SOUTHERN ALBERTA.—All the large sheep ranches in Alberta are found south of a line drawn east and west through the village of Olds. This district is referred to as Southern Alberta.

The early spring was very unfavourable for lambing and a great many young lambs were lost in the snow; the losses in a great many cases running from twenty to thirty per cent. of the total number. This no doubt accounts for the rather small natural increase, which appears to be less than fifty per cent. of the total number of ewes. Cold rains after shearing also proved fatal to many sheep.

The average weight of fleece was about six and two-thirds pounds, which was approximately equal to the clip of last year, but in some cases a lighter fleece of cleaner wool was reported. The price has been from nine to twelve cents per pound, about two cents higher than the previous year's price, though hardly so satisfactory, taking quality into consideration.

Spear grass has been very troublesome to lambs and some sheep have suffered from a species of foot-rot which spreads to the hocks and knees and also affects the lips. Scab was reported in some flocks in the vicinity of Gleichen; quarantine was, however, imposed and resulted in stamping it out. With the exception of a few cases of catarrh, the general health of the flocks was good.

The foundation stock in this district was principally Merino, which has been crossed for a number of years with Shropshire, Oxford and Southdown. The breed of rams most frequently used now, appears to be the Shropshire.

SWINE.

Below will be found a schedule showing the market quotations of live and dressed hogs at Winnipeg and Edmonton for the past year :

MONTH	WINNIPEG		EDMONTON	
	LIVE	DRESSED	LIVE	DRESSED
	CENTS PER LB.	CENTS PER LB.	CENTS PER LB.	CENTS PER LB.
January	4 $\frac{3}{4}$	6 $\frac{1}{4}$	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
February	4 $\frac{3}{4}$	6 $\frac{1}{4}$	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
March	4 $\frac{3}{4}$	6 $\frac{1}{4}$	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
April	4 $\frac{3}{4}$	.....	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
May	4 $\frac{3}{4}$	.....	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
June	4 $\frac{3}{4}$	.....	4 to 4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6
July	4 $\frac{3}{4}$	.....	4 $\frac{1}{2}$ to 5	5 $\frac{1}{2}$ to 6 $\frac{1}{2}$
August	4 $\frac{3}{4}$	.....	5 to 5 $\frac{1}{2}$	6 $\frac{1}{2}$ to 7
September	5 $\frac{1}{8}$	.....	5 to 5 $\frac{1}{2}$	6 $\frac{1}{2}$ to 7
October	5 $\frac{1}{8}$	5 $\frac{3}{4}$	4 $\frac{1}{2}$ to 5	5 $\frac{1}{2}$ to 7
November	4 $\frac{3}{4}$	5 $\frac{3}{4}$	4 $\frac{1}{2}$ to 5	5 $\frac{1}{2}$ to 6 $\frac{1}{2}$
December	4 $\frac{3}{4}$	5 $\frac{3}{4}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6

Very little attempt has been made by breeders during the year to improve the swine in the Territories by the importation of high class breeding animals, and as the number of purebred boars raised in the country is very insignificant, the tendency has been towards deterioration rather than improvement.

Owing to the somewhat unfavourable season for wheat growing, there was a brisk demand created for store hogs late in the fall, which could only be partially met. This demand is characteristic of the general situation. When wheat is up in price and crops are good the average farmer has not the inclination to feed hogs. When, however, reverses come along, particularly if coupled with a large quantity of unsaleable grains on hand, he immediately displays anxiety to go into pork raising. Needless to say, the hog business is not one which can be taken up and discarded at pleasure. In order to make it a success it is absolutely necessary to have proper accommodation for wintering the breeding stock constructed with a view to the greatest possible economy of time in caring for the animals. The feeding of hogs around a straw stack during the winter is a business to which is attached the minimum of profit. Another fruitful source of failure is the attempt to keep hogs closely penned. This method of pork raising is wasteful from a standpoint of economy of time, as everything a hog consumes has to be carried to it. It is a sinful waste of feed as, investigations on the subject have clearly demonstrated the value of exercise in order to make the greatest possible gain on the smallest possible quantity of grain, and it also debars the animal from securing a very large proportion of its food by grazing. Before hog raising can be prosecuted with any degree of success our farmers must provide pastures enclosed with hog proof fences and containing a convenient water supply. If it is demonstrated that alfalfa can be successfully grown in the irrigated portion of the country, the problem becomes a simple one there. In portions of the country where a stand of alfalfa cannot be obtained, small plots of rape or tares or, in fact, any green crop may be grown as a pasture crop.

Many farmers entertain a deep-rooted prejudice against exercise for hogs; the popular impression being that the business of the hog is to eat, sleep, and grow fat. Investigations on the subject have amply demonstrated the fallacy of this idea. Some years ago, prior to the evolution of the modern bacon hog and the imperative demand for long lean sides, while the three

hundred pound hog, liberally endowed with "blubber," was considered the ideal towards which all breeders aimed, and when the production of mess pork constituted the highest aspirations of swine feeders, there might have been some excuse for the close penning of store hogs from their birth up; but these conditions exist no more. A long-suffering public has at last broken out in open rebellion against excessively fat pork in any shape, and the hog required to meet the present market demands is an active, early maturing animal, a good grazer and an economical feeder. In this connection it might be of interest to note that in a hog feeding experiment to determine the value of grass and exercise in the production of pork, conducted at Utah Agricultural College, it was found that pigs allowed to roam at will over an eighteen acre pasture and fed all the grain they would eat up clean, made the most rapid growth, and, what is of much more importance, apparently made the best use of the feed. It was also found that the green grass appeared to be of the greatest value when pastured and that exercise seems to be necessary to increase the consumption of food and probably the digestive capacity of hogs. In some sections of the west the pasturing of hogs has been practised for years, in fact, in many places, particularly in Northern Alberta, pigs are required to make their living *entirely* from pasture. For the benefit of those who have adopted the latter method, it may be stated that the experiments above referred to also brought out the fact prominently that pigs kept on grass *alone* made very slow growth, so slow that it would require fully two seasons for maturity, making the profits exceedingly doubtful.

Numerous complaints reached the Department during the past year of the low quality of the hogs throughout the western portion of the Territories and the wholly inadequate supply of breeding animals and the necessity which apparently existed for some action with a view to assisting the farmers to augment their herds with a better class of swine. Negotiations were therefore opened up under your direction with the Canadian Pacific Railway Company and the Calgary & Edmonton Land Corporation, which are particularly interested in the western portion of the Territories, owing to the large land grants held by them in Alberta. The proposition set forth in the following memorandum, issued for the information of the public, was submitted and agreed to, after the Ontario Department of Agriculture had consented to co-operate for the purpose of promoting interprovincial trade.

Arrangements have now been completed between the Territorial Department of Agriculture and the Canadian Pacific and Calgary & Edmonton railway companies, whereby measures will be taken during the coming spring to improve the swine stock in Alberta. The Canadian Pacific Railway Company has granted free transportation for a shipment of hogs from Ontario to the West, the Calgary & Edmonton Land Corporation has made a grant of \$500 to be expended by the Department in furthering the object in view, and the Ontario Government has agreed to co-operate to the extent of purchasing and gathering the animals required free of charge.

When outlining the scheme for the improvement of cattle in the Territories, decided upon a couple of years ago, the Department made it its sole aim to facilitate, through reduced cost and convenience of transportation, the importation of superior sires only, knowing that female stock of fair quality was already in the country. The hog question will, however, be dealt with on a somewhat different basis. In the first place, the notorious lack of quality in the brood hogs at present in the country, calls for an increased number of thoroughbred boars of high individual merit and, secondly, the wholly insufficient number of sows now in the hands of farmers, should be augmented by the importation and distribution of a large number of wellbred, selected, young females.

It is now proposed to procure in the province of Ontario two hundred brood hogs, of the class described above, due to farrow during May, and twenty-five thoroughbred boars of the Berkshire, Yorkshire and Tamworth breeds, and have them brought west

in the early spring. Upon the arrival of this shipment, a series of auction sales, previously advertised, will be held at various points along the line of railway, where a certain number of these animals will be offered for sale at public competition. A low upset price will be placed on each individual head, representing its cost price, below which positively no sale will be made.

The value of a first class sow in the west, due to farrow within a month, ranges from \$20 to \$30. It is expected that the Department will be able to offer such sows at a minimum price of from \$12 to \$16, according to weight and quality.

Not more than one boar and two sows will be sold to any one person, and all purchasers will be required to sign a simple form of agreement before taking delivery, setting forth that they are *bona fide* residents of the North-West Territories and that they will neither slaughter, sell nor remove the said animals from the Territories for a period of two years from date of sale, without first obtaining permission from the Department of Agriculture at Regina.

The response to this action on the part of the Department was very gratifying indeed. Hundreds of farmers communicated with the Department and expressed their approval of the steps taken to improve the swine stock of the country, and there is every reason to hope that the proposed sales will be a great success.

If the experiment proves successful, and it is found that the farmers in other portions of the Territories are willing to pay the actual cost of swine landed here, I would strongly recommend that overtures should be made the Canadian Pacific Railway Company with a view to obtaining transportation for a similar shipment to the easterly portion of the Territories, which could be disposed of on the same conditions, with whatever modifications our experience in connection with the Alberta shipment may suggest. It is probable that a carload could be placed along the Manitoba & Northwestern railway, one car at points on the Qu'Appelle, Long Lake & Saskatchewan railway and another carload or two along the main line of the Canadian Pacific Railway in Assiniboia.

BRANDS.

The following statement shows the number of transactions under the Brand Ordinance during the past year:

Number of transfers.....	1899,.....	132.
Reallotments from old records	{ 1898,.....	3,064.
	{ 1899,.....	148.
Allotments of new cattle brands..	{ 1898,.....	2,111.
	{ 1899,.....	1,466.
Allotments of new horse brands ..	{ 1898,.....	941.
	{ 1899,.....	821.
Allotments.....	{ 1898,....	6,120.
	{ 1899,.....	2,435.

It will be noticed that the total number of brands now on the records of the Department is 8,555. Practically all disputed cases have now been wound up and the routine involved in the allotment of brands has been reduced to a minimum. It is, however, found that it requires the entire time of one man to properly conduct this branch of the work of the Department.

During the month of June, it became apparent that the series of brands which were then being allotted, consisting of two letters and one figure, was rapidly being exhausted and that it would be necessary to adopt some other system which would conform to the provisions of The Brand Ordinance. A series of brands consisting of one letter, one figure and a sign (a bar, half diamond or quarter circle above or below the brand), was

selected and submitted for the approval of a number of leading stockmen, and finally adopted. I am pleased to be able to state that the new system is working out in an eminently satisfactory manner. A search has now to be made before any allotment can issue, in order to ascertain whether the combination would conflict with previously recorded brands containing one or more of the characters used in such a combination. While the old three character brands could be allotted with less expenditure of time in the Department, the new combinations are more popular with the stockmen.

During the year another new departure was made, namely, the allotment of each cattle brand for four different positions, namely, the left and right hips and ribs, instead of as heretofore, for the whole of the animal. This, of course, increases the life of any particular series considerably. Care is now also being taken not to allot combinations, bearing any resemblance whatever, in the same portion of the Territories; such, for instance, as the same brand to two different persons for the ribs and hip respectively upon the same side of the animal.

Very considerable interest has been taken by the Department in the question of chemical branding. One J. C. Campbell, of Elsternwick, Victoria, Australia, claimed to have invented a process of chemical cauterising which would leave a permanent mark, devoid of hair. The fluid was applied with the face of an ordinary branding iron to the hide of the beast. The mixture was said to burn its way down to the skin and to produce a definite result. Skins and tanned hides which had been branded with this fluid were examined and disclosed the fact that the injuries occasioned to the structures of the skin terminated just in the dermis, or true skin, the epidermis being totally destroyed by the process. In time a scar was produced devoid of hair and glands. The results of Australian investigations were decidedly promising. A communication was addressed to the Under Secretary of Agriculture at Melbourne, Victoria, and further information asked with a view to having experiments conducted upon range cattle in this country. A reply was, however, received to the effect that later results had not been entirely conclusive, but the opinion was expressed that the experiments had been along the right lines and that a more judicious compounding of the mixture would undoubtedly be crowned with success. The intention was to have further trials made of the result of which this Department would be duly notified. It is understood that the patent rights have now been sold to a New Zealand concern by the inventor and while negotiations are pending between the patentee and the syndicate, the sale of the fluid is not permitted.

The following extract from the Chief Inspector of Stock and Registrar of Brands for Queensland, Australia, on the subject, is of interest:

A mode of imprinting brands by means of a chemical fluid known as Gibson's patent was introduced here in February last by Mr. J. G. Ward, of New Zealand, and for which it is claimed that it removes the hair without deteriorating the hide. If this should prove the success claimed for it, the use of symbol or cheek brands will be rendered unnecessary, as cattle owners, without any exception, would prefer to continue the use of their present brands, provided they did not injure the hides. I submitted this branding liquid to a severe test on some cattle in the experimental paddock, Indooroopilly, in February, and the results seem most promising. The brand is imprinted by the destruction of the hair, so that when healed the impression is plainer than even the fire brand. It is my intention to slaughter one of the animals branded and have the hide tanned, so as to ascertain the effect of the brand on the leather, and will submit a special report on the matter.

may here be mentioned that Mr. T. V. Simpson, V.S., of Yorkton

placed on the market a chemical branding fluid, during the year, which by many was considered a success. Branding by chemical means would be a great boon to the smaller stockmen of Northern Alberta and Eastern Assiniboia, who do not enjoy the opportunity of branding large numbers of cattle and thus become skilled in the proper use of the hot branding iron.

During the year arrangements have been made with the publishers of The North-West Brand Book to place before the public an authorised list of brands issued by this Department up to and including January 1, 1900. The manuscript was prepared in the Department and proof is now being received and corrected. It is expected that the brand book will be in the hands of the Department during the early spring of 1900, when copies thereof will be supplied to all pound keepers and stock inspectors.

HERD ORDINANCE.

The herd district was enlarged during the past season by the addition thereto of the following areas :

Township 22 Range 30 west of the Principal Meridian.

Sections 1 to 24 inclusive of Township 17 Range 30 west of the Principal Meridian.

Township 23 Range 30 west of the Principal Meridian.

Township 23 Range 21 west of the Second Meridian.

Townships 20 Ranges 13 and 14 west of the Second Meridian.

The north half of Townships 23 Ranges 3 and 4 west of the Third Meridian.

Townships 39 Ranges 3, 4 and 5 west of the Third Meridian.

Township 7 Range 5 west of the Second Meridian.

All that portion of Township 17 Range 38 west of the Second Meridian lying south of the main line of the Canadian Pacific railway.

Township 21 Range 14 west of the Second Meridian.

Township 7 Range 5 west of the Second Meridian.

Townships 8 and 9 Ranges 14 and 15 west of the Second Meridian.

One hundred and sixty-seven horses, ninety-two cattle and forty-two sheep were impounded during the past season, and the proper notices inserted in the official gazette, as required by the Ordinance.

SALE OF ANIMALS UNDER PROVISIONS OF THE HERD ORDINANCE,
DURING 1899.

Poundkeeper	Location	Class of Animals	First Notice in Gazette	Date of Sale	Net Pro- ceeds of Sale
			1898	1899	\$ c
Wm. Welch.....	S 31 16- 7w2	Cow	Nov. 15	Feb. 25	2 35
			1899		
T. C. Bunn.....	N-W 22-17-14w2	Mare	May 31	July 1	66 25
J. Fahlman.....	N-E 31-15-17w2	Mare and 3 geldings	June 5	" 10	132 50
Chas. Reed.....	S-W 28- 4- 2w2	Mare	" 15	" 14	22 03
Edmonston Smith	N-E 32-19-21w2	Mare	" 15	" 15	25 00
Andy Hogg.....	N-W 18-17-32w1	Horse and mare	" 30	" 29	37 39
J. H. Coventry...	S-E 28-15-24w2	Pony mare	" 30	Aug. 7	15 00
N. B. Colten.....	S W 3-20-20w2	3 Fillies, mare and stallion	" 30	July 28	16 75
Wm. Welch.....	S 31-16- 7w2	Cow	" 30	Aug. 2	7 80
L. E. Simon.....	S E 2-15-11w2	Horse	July 15	" 21	3 75
W. M. F. Kay. ...	N-W 32-10-30w2	Mare	Aug. 31	Sept. 15	6 20
Philip Schneider.	N-E 10-22-31w2	Horse and mare	" 31	" 26	112 60
Edmonston Smith	N-E 32-19-21w2	2 Mares, 1 colt	Sept. 30	Oct. 28	66 00
Franz Muller....	N-E 18-19-17w2	Cow, 2 mares, heifer	Oct. 31	Nov. 17	66 00
John Jasper.....	S-W 28-12-33w1	Horse and mare	Nov. 15	Dec. 8	35 62

ESTRAY ANIMALS.

Two hundred and sixty-eight horses, one hundred and sixty-two cattle, one swine, thirty-nine stallions, sixteen bulls and three sheep were reported estray to the Department during the past season and duly advertised in the official gazette.

I have to reiterate the comments contained under the same heading in the last annual report of this Department regarding the great advantages which would accrue to stock owners in the Territories if recorded brands were universally adopted. Immediately upon receipt in this Department of the notification required under the Ordinance to the effect that an animal has been captured under the Pound Districts, Herd, Estray or Entire Animals Ordinances, if such animal bears a brand a search is immediately made through the brand records with a view to ascertaining the name and address of the owner, who is at once notified as to the whereabouts of his animal. As the greater number of captures occur in the easterly portion of the Territories, where a vast number of cattle and horses are, as yet, branded with unrecorded brands, it stands to reason that the Department in a great number of cases fails to locate the owners. It is, however, a fact that the notifications sent from the Department to the supposed owners of such animals, have been found exceedingly useful. Communications are on file in which such persons express their approval of this action on the part of the Department, stating that had it not been for this notification they would not have known where to look for the missing animals and would probably never have recovered them. I cannot too strongly urge upon the smaller stockmen of Assinibcna and Saskatchewan the great advantages of using nothing but recorded brands. The moment a recorded brand is placed upon an animal, it becomes absolutely impossible to lose it. It is a very serious offence for any person to dispose of estray animals without going through the formalities required by law,

and it is, as a matter of fact, very seldom done, except through ignorance. The law provides for the immediate notification of the Department, which, in turn, promptly notifies the owner without expense to him.

Below will be found a statement showing the details of all sales during the year of animals captured under the Estray and Entire Animals Ordinances.

SALE OF ANIMALS UNDER ESTRAY AND ENTIRE ANIMALS ORDINANCES, 1899.

JUSTICES	ADDRESS	CLASS OF ANIMAL	1ST NOTICE IN GAZETTE	DATE OF SALE	NET PROCEEDS OF SALE
			1898	1899	\$ c
W. R. Winter	Calgary	2 Cows 2 strs	Jan. 15	Jan. 14	3 70
G. F. Guernsey	Ft. Qu'Appelle ..	Filly	July 15	Feb. 1	17 50
do	do	Heifer	" 15	" 6	2 85
E. Bolton	Saltoats	Mare & filly	" 15	Nov. 2	96 50
M. McIntyre	Strathcona	2 Mares	Sept. 15	May 18	20 27
M. Gardner	Springbank	2 Horses	" 15	April 22	27 25
C. H. Sahlmark	Ohlen	Pony mare	Oct. 15	" 29	12 25
S. Fleming	Summerberry	Mare	" 15	May 13	.....
do	do	Stallion	" 15	" 13	.....
Wm. Logan	Wapella	2 heifers	Nov. 15	Feb. 8	8 00
Colin Bird	Whitewood	Heifer	Dec. 15	June 26	8 00
J. W. Costello	Calgary	Mare	" 15	May 25	1 75
Wm. Kirkby	Red Deer Hill ..	Steer	" 31	August 20	8 36
R. C. Telford	Leduc	Stallion	Jan. 1899, 16	June 12	.....
G. F. Guernsey	Ft. Qu'Appelle ..	Horse	" 16	Sept. 22	9 53
A. H. R. Bastien	Rocanville	Steer	" 16	Dec. 30	3 75
Geo. W. Gairdner	Edmonton	Steer	" 16	July 22	.....
A. L. C. Cameron	Calgary	Heifer	" 31	Dec. 7	3 25
H. deDeflal	Duck Lake	Steer	" 31	August 11	7 15
J. J. Heaslip	Alameda	Steer	Feb. 28	Nov. 14	20 25
A. E. Snyder	Edmonton	Steer	March 15	" 25	28 35
Geo. W. Gairdner	do	Stallion	May 31	July 24	.....
W. J. Dawson	Crescent Lake ..	Stallion	June 30	August 21	.....
Jos. Hollis	Kutawa	Stallion	" 30	" 22	.....
W. B. Thorne	High River	Stallion	July 15	" 21	3 00
J. S. Macdonald	Qu'Appelle	Stallion	" 15	Dec. 13	26 40
John Walker	Grenfell	Mare	" 31	" 23	10 40
Sydney Mearon	Edmonton	Stallion	Aug. 15	Sept. 12	0 60
W. C. Sanders	Moose Jaw	Mare	" 31	July 17	1 20
do	do	Bull	Nov. 30	Dec. 22	.....

GAME PROTECTION.

At the beginning of the year fifty-nine appointments of game guardians had been made. During the year seventy-two guardians were added to the service, and the resignations of four were accepted. Twenty game licences, under the provisions of section 20 of The Game Ordinance, were issued, and nine licences, under the provisions of Section 3 of An Ordinance to amend Chapter 85 of the Consolidated Ordinances, were issued by the various game guardians.

As indicated in the last departmental report, considerable trouble had in the past been experienced with reference to infractions of The Game Ordinance by Indians. The matter was taken up with the Indian Department, and after considerable correspondence a list was compiled of all the tribes which had been brought under the provisions of the Territorial game laws

and all game guardians have now been advised that the Game Ordinance applies to the following Indian tribes:

AGENCY	BAND	LOCATION.
Morley	Stonies	Morley
Birtle	Enoch	Birdtail Creek
do	Oak River	Oak River
do	Oak Lake	Oak Lake
do	Kahdomine	Turtle Mountain
Moose Mountain	Pheasant Rump	Moose Mountain
do	Striped Blanket	do
do	White Bear	do
Crooked Lake	Ochahpowace	Round Lake
do	Kahkeewistahaw	do
do	Co.wessess	Crooked Lake
do	Sakimay	do
Muscowpetung	Piapot	Qu'Appelle Valley
Assiniboia	Carry the kettle	Indian Head
Muscowpetung	Standing Buffalo	Qu'Appelle Valley
do	Pasquah	do
do	Muscowpetung	do
File Hills	Peepeekesis	File Hills
do	Okanese	do
do	Star Blanket	do
do	Little Black Bear	do
Touchwood Hills	Muscowequan	Little Touchwood Hills
do	George Gordon	do
do	Day Star	Touchwood Hills
do	Poor Man	do
Duck' Lake	One Arrow	Batoche
do	Okemasis	Duck Lake
do	Beardy	do
do	John Smith	South Saskatchewan
Battleford	Red Pheasant	Eagle Hills
do	Stony	do
do	Moosomin	Jackfish Creek
do	Sweet Grass	Battle River
do	Pound Maker	do
do	Thunder Child	do
do	Little Pine	Battleford
Onion Lake	Lucky Man	do
Edmonton	Seekaskoots	Onion Lake
do	Michel	Sturgeon Lake
Hobbema	Enoch Lapotac	Stony Plain
do	Ermineskin	Bear's Hill
do	Sampson	do
do	Bobtail	Battle River
Sarcee	Louis Muddy Bull	do
Blackfoot	Bull's Head	Near Calgary
Piegán	Old Sun	Box River
Blood	Eagle Tail	Old Man's River
Stragglers	Red Crow	Belly River
		Medicine Hat,
		Moose Jaw and
		Swift Current

A request has been made to the Indian Commissioner to have the bands, at present excluded from the operation of The Game Ordinance, included in the list covered by proclamation, in order that they may be liable to prosecution where game is killed out of season by them.

PRAIRIE AND FOREST FIRES.

I am pleased to be able to report that the havoc worked by prairie and forest fires during the past season was not nearly as serious as usual, owing to the excessive autumn rainfall in every portion of the Territories. A large number of appointments of fire guardians have been made in different portions of the country, and an effort has been made to keep in close communication with the fire guardian service.

It is understood that an appointment has recently been made by the Federal Government of an Inspector of Forests who will be specially charged with the reforestation and preservation of forests in Manitoba and the North-West Territories, and who will doubtless take steps to prevent as far as possible the annual occurrence of destructive bush fires.

Arrangements were made during the year with the Department of the Interior to have the prairie fire notice issued by the Department last year, translated into various foreign languages, in order that the provisions of the law may be brought to the attention of newly arrived immigrants from foreign lands.

DESTRUCTION OF GREY WOLVES.

The following bounty was paid on grey wolves during the past year: For every bitch wolf over three months of age, \$7.00; for every dog wolf over three months, \$5.00, and for every pup wolf under three months, \$2.00. The Western Stock Growers' Association administered the wolf bounty for Western Assiniboia and Southern Alberta. The inspectors acting for the association were John Black, Macleod; W. G. Mackay, Calgary; John Stewart, Maple Creek. These men were each paid a salary of \$25 00 by the Association. The inspector acting for the Department in the Wood Mountain district was J. L. Desautelles, of Willow Bunch.

During the year bounties were paid for the destruction of the following animals: 43 bitch wolves, 75 dog wolves and 336 pups.

The regulations under which bounties were paid during the early part of the year were those in operation up to the end of 1899 and set forth in the report for that year. These regulations contemplated the payment of the full bounty by the Government which, however, was supplemented with an additional bounty on bitch wolves by The Western Stock Growers' Association. On March 1, a conference was held between a committee of the said Association, and yourself and an arrangement was arrived at whereby the Department should, in the future, only defray one-half the bounty fixed by regulation, the balance being paid by the Association. This understanding went into effect on May 13th, when the following regulations were approved by you:

The pelt (including the head) of each timber wolf upon which bounty is claimed must be produced intact to the Inspector by the person claiming the bounty.

The issuer of the warrant shall use every means in his power to satisfy himself that the animal upon which the bounty is claimed has been killed after the first day of January, 1899, as to the sex where bounty is claimed on bitch wolves, and as to the age where bounty is claimed on adult wolves. Bounties on the adult scales are only to be paid when the issuer is satisfied that the animals are sufficiently developed to be destructive.

Upon the production of the pelt of any timber wolf to him, and on being satisfied that the animal killed was a timber wolf and not a coyote or other species of the wolf family, and that the animal was killed after the date herein specified, the issuer of the bounty warrant shall punch a portion out of each ear, so as to efficiently prevent

duplication, and may issue a warrant in the prescribed form to the claimant for the amount of the bounty. The Inspector shall number consecutively and keep a list of all the warrants issued, and shall send a copy of such list to the Secretary of the Association at the end of each month.

Upon the warrant being sent to the Secretary of the Western Stock Growers Association as a voucher, a cheque will be issued to the order of the person named in the warrant.

An advance out of the North-West Government appropriation for the destruction of wolves of the sum of \$500 will be made to the Association (until the said appropriation is exhausted) upon the Secretary thereof submitting a statement, accompanied by the necessary paid warrants, showing an expenditure on the payment of such bounties of the sum of \$1,000.

The Western Stock Growers' Association may from time to time fix the scale of bounties to be paid on bitch, dog and pup wolves.

Unless otherwise specified, these regulations expire and have no effect after December 31, 1899.

The amount expended during the past year under the above regulations out of The Western Stock Growers' Association was \$692. It seems a pity that this association does not command the support which its laudable objects and importance to every stockman within its territory would appear to merit. Owing to its limited membership, a voluntary contribution to the extent of over \$700 per annum, in order to check the increase of these destructive animals, falls somewhat heavily upon the Association. It is to be hoped that the smaller stockmen throughout the range country will not withhold their influence and support from an organisation such as this which more or less fights the battles of every owner of cattle and horses in Western Assiniboia and Southern Alberta and has obtained many valuable concessions in the past and done much useful work, entitling it to every consideration at the hands of the stockmen.

VITAL STATISTICS.

The first legislation with respect to the collection of vital statistics in the North-West Territories is to be found in Ordinance No 9 of 1878, which provided, *inter alia*, that "The registrar of deeds for the North-West Territories shall keep and file in his office all returns of marriages made to him under the provisions of this Ordinance. He shall also keep the same in a book specially kept for that purpose. . . . He shall also, on application, furnish a copy of the record of any certificate of marriage in his office on receiving 50 cents, which said copy, certified by such registrar under his hand and seal shall be received as *prima facie* evidence of the marriage named therein by all parties administering justice in the Territories." Ordinance No. 7 of 1881 provided for the growing needs of the Territories at that time by subdividing the jurisdiction of the registrar of deeds in the manner indicated in the following section: "The general registrar of deeds in and for the North-West Territories, or such other person as the Lieutenant Governor may from time to time appoint, shall be marriage registrar, except where any registration district for deeds has been erected and a registrar appointed therefor, then the registrar of deeds appointed therefor or such other person as the Lieutenant Governor may from time to time appoint, shall for such district be marriage registrar." The Ordinance also provided for the issuing of certificates of registrations. Under the system above outlined registrars of marriages were appointed at Edmonton, Prince Albert, Calgary, Battleford and Regina.

The first Ordinance dealing comprehensively with the registration of births, marriages and deaths was No. 6 of 1888, which provided for the ap-

pointment of a registrar general, that every electoral district should be a registration division and that registrars therefor should be appointed by the Lieutenant Governor in Council; also that the Ordinance should not come into effect until the 1st April, 1889. The Ordinance also required returns to be sent to the registrar general by the division registrars every six months and that they should be arranged, indexed, bound and kept in his office. Mr. R. B. Gordon was appointed registrar general with headquarters at Regina. The Ordinance just quoted made the registration divisions coincident with the electoral districts and the number of the latter was at this time fixed by The North-West Territories Act (Chap. 19, 51 Vict.) at 22. By an amending Act (Chap. 22, 54-55 Vict.) the number of electoral districts, and consequently of registration divisions, was raised to 26, at which they remained until the Legislative Assembly obtained power to fix the number by the amending Act of 1894.

By Ordinance No. 7 of 1889 registrars were required to keep duplicate records of all entries. The registrar general was also required to supply each division registrar with index books and portfolios for preserving their records. Division registrars were also empowered to grant extracts to applicants for such on payment of the fees fixed by the Ordinance. The provisions of this Ordinance were to take effect from the date on which the principal Ordinance came into operation. An amending Ordinance was passed in the session of 1892 requiring the registrar general to cause the returns made under the Ordinances of 1878 and 1881 to be arranged, indexed and kept in his office, and providing for extracts being made therefrom.

No further changes were made in the legislation on this subject until the Ordinance of 1897 was passed. By this Ordinance the office of registrar general was done away with. The Lieutenant Governor in Council was empowered to direct that the Ordinance be administered by any member of the Executive Council and in the absence of any such direction it should be administered by the Territorial Secretary. Provision was also made for the establishment of registration divisions, irrespective of electoral districts, and for the appointment of registrars therefor. Registrars were required to forward the original returns received by them during each month to the department administering the Ordinance and were only allowed to give extracts if application were made to them for such while the return from which it was to be made was in their possession. All returns were to be forwarded to the Department, for each month, on or before the tenth of the succeeding month. Various other important provisions were embodied in this Ordinance which, as it appears in The Consolidated Ordinances 1898, is the law as it at present stands.

Under the provisions of section 3 of the above mentioned Ordinance, the administration of the Ordinance was transferred to this Department from the Department of the Territorial Secretary, by an Order in Council dated 21st March, 1899. It was found that the records of marriages made under the Ordinances of 1878 and 1881 were still in the hands of the registrars of land titles and steps were taken to secure them. All the duplicate records kept by division registrars under the Ordinance of 1889 were also called in and the records of the Department are now as complete as it is possible to make them.

At the time when the administration of The Vital Statistics Ordinance was taken over by this Department there were thirty-four registration divisions covering the whole extent of the organised Territories, but during the course of the year owing to the rapid increase of population, chiefly

through immigration, it was found necessary to make a further subdivision when they were increased to thirty-seven.

Once the work connected with the registration of vital statistics was taken fairly in hand by the Department, it was seen that considerable carelessness and ignorance of the provisions and objects of The Vital Statistics Ordinance prevailed among the public and even among a few of the registrars, some of the latter accepting returns which were practically of no value. Steps were taken to remedy this state of affairs and a circular letter was addressed to all registrars, drawing attention to points in which greater accuracy was required in their work and each was supplied with a number of posters for the information of the general public in their respective districts.

The result of these measures has on the whole been satisfactory, there being a distinct improvement observable both in the accuracy of the returns themselves as well as the promptness with which they are sent in to the Department each month. Measures to further improve this branch of the Department's work are now under contemplation and, as will be seen from the subjoined tables, the information derived from the vital statistics returns is now given to the public in a form in which it is hoped it will be found interesting and even valuable.

The chief difficulty in the way of a proper administration of this Ordinance by the Department and its officers, is in dealing with newly arrived, non-English speaking, immigrants. They are, to begin with, entirely ignorant of the law and being also ignorant of the English language, it is extremely difficult for them to make intelligible returns. These difficulties will of course disappear as they become assimilated.

The total number of marriages in the Territories during the year was 671. The mean marriage age of males was 29.54, of females 23.49 years. The oldest bridegroom was 68 years of age and the oldest bride 70, the youngest bridegroom 18 years old and the youngest bride 14. The following table indicates the native countries of the contracting parties.

	MALES	FEMALES
Canada.....	323	355
Great Britain and Ireland.....	175	112
United States of America.....	48	67
Other countries.....	115	124
Not stated.....	10	13

MARRIAGES 1899.

DIVISION.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
St. Albert.....	3	1	...	3	3	1	3	2	2	...	3	...	21
Whitewood.....	2	3	1	1	1	1	3	1	1	3	1	2	20
High River.....	3	...	...	...	...	1	1	...	1	1	1	...	8
Battleford.....	1	...	...	...	3	1	2	...	1	1	2	...	10
Strathcona.....	...	...	...	...	...	...	2	3	1	2	2	3	13
S. Qu'Appelle....	6	1	...	...	1	1	1	1	1	3	1	...	16
Macleod.....	3	3	1	2	1	2	4	...	1	6	6	1	30
N. Qu'Appelle....	...	3	...	1	1	4	8	4	...	1	6	3	31
Wolseley.....	2	2	1	...	1	1	1	2	...	2	...	2	14
Medicine Hat....	...	1	1	2	...	1	1	4	1	2	...	2	15
Victoria.....	3	2	...	...	1	4	1	...	1	1	1	...	14
Calgary.....	4	3	5	12	5	14	6	6	1	10	11	10	90
Red Deer.....	2	4	2	2	2	3	2	4	3	5	4	3	36
Maple Creek.....	...	4	...	1	...	2	3	4	1	...	...	2	20
Yorkton.....	4	...	...	1	1	1	1	...	...	1	...	...	9
Lethbridge.....	1	...	3	4	4	1	4	3	2	2	3	2	29
Moose Jaw.....	3	2	...	4	...	2	...	1	2	1	2	1	18
Grenfell.....	2	2	1	5	3	2	2	1	...	2	2	5	27
Saltcoats.....	1	...	1	1	1	1	...	...	2	1	...	1	9
East Souris.....	1	...	...	1	...	2	1	...	...	1	2	...	8
Regina.....	5	5	1	3	2	4	2	2	3	3	2	3	35
Banff.....	...	...	1	1	...	2	1	1	2	1	1	...	10
Moosomin.....	2	4	3	4	1	3	1	3	1	1	5	6	34
W. Prince Albert	...	...	...	...	...	2	...	...	1	...	1	2	9
Edmonton.....	5	11	2	...	3	5	2	3	...	1	2	...	34
Indian Head....	2	1	1	1	2	1	1	...	...	...	3	1	13
Batoche.....	2	...	...	1	1	...	3	...	...	...	...	...	7
E. Prince Albert	2	...	1	1	1	1	...	1	1	3	...	1	12
Wetaskiwin.....	...	1	1	2	...	2	3	4	2	3	5	2	25
Mitchell.....	1	...	...	...	...	3	...	1	2	2	3	2	14
Kinistino.....	...	...	...	1	...	...	...	1	...	...	1	2	5
Alameda.....	...	1	...	...	...	...	...	...	...	...	...	...	1
Cannington West	...	1	...	...	...	...	...	2	...	1	2	5	11
Cardston.....	...	...	...	...	...	...	...	...	...	1	1	2	4
Souris West.....	1	1	...	3	1	2	1	2	2	...	3	2	18
Weyburn.....	...	...	...	...	...	...	...	...	1	...	...	...	1
The Territories .	61	56	26	57	39	70	60	56	38	64	79	65	671

DEPARTMENT OF AGRICULTURE

BIRTHS 1899.

DIVISION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	MALES	FEMALES	TOTAL
Souris E.	4	6	1	1	1	5	4	11	2	7	2	3	25	22	47
Cannington E. .	3	...	...	...	1	1	1	1	1	3	...	...	7	4	11
Moosomin	5	7	4	5	7	7	7	6	5	3	1	7	36	28	64
Saltcoats	8	9	8	14	8	7	9	12	4	7	6	7	50	49	99
Kinistino	1	3	...	...	4	...	...	...	2	2	...	2	3	11	14
Prince Albert E.	2	3	2	3	1	1	8	6	6	2	2	...	21	15	36
Souris West . . .	2	2	4	3	...	...	2	...	5	...	...	...	11	7	18
Cannington W. .	2	6	5	2	5	1	6	...	...	8	...	...	18	17	35
Whitewood	1	3	5	4	7	5	2	6	3	4	2	...	22	20	42
Yorkton	9	13	20	15	6	6	8	12	9	25	6	8	62	75	137
Grenfell	9	5	8	12	5	5	4	8	7	5	6	7	41	40	81
Wolseley	1	4	4	14	6	7	5	6	8	2	7	1	38	27	65
Weyburn . . . . .	...	1	...	2	...	...	...	5	1	1	1	...	3	8	11
Indian Head . . .	1	3	2	4	4	5	3	7	6	7	3	...	22	23	45
Qu'Appelle S. . .	6	2	2	2	5	4	5	8	8	10	5	7	35	29	64
Qu'Appelle N. . .	14	12	11	9	4	5	12	12	8	5	14	...	51	55	106
Regina	10	10	11	13	22	19	9	21	14	10	10	4	79	74	153
Moose Jaw	3	8	7	3	5	6	4	4	8	4	...	1	28	25	53
Batoche	3	6	4	5	6	9	8	2	...	...	...	...	22	21	43
Rosthern . . . . .	...	...	...	...	1	...	3	5	9	2	3	5	11	17	28
Mitchell	7	13	10	8	5	4	3	1	1	1	...	...	23	30	53
Prince Albert W.	3	3	...	6	2	2	1	1	1	1	1	...	7	14	21
Maple Creek . . .	4	...	5	2	1	2	1	1	2	...	5	...	10	13	23
Battleford	6	5	1	7	5	5	1	5	2	5	2	1	21	24	45
Medicine Hat . .	8	7	14	5	10	6	8	11	10	6	10	6	48	53	101
Lethbridge	11	4	16	9	10	10	10	20	22	4	6	4	60	66	126
Calgary	14	16	15	10	8	13	17	23	15	8	8	9	93	63	156
Red Deer	7	3	11	...	10	8	12	10	12	8	7	12	62	38	100
Wetaskiwin	4	12	11	6	7	5	10	10	6	15	5	3	54	40	94
Strathcona	1	...	2	2	2	4	9	8	11	10	14	12	40	35	75
Victoria	3	1	6	6	4	7	7	13	7	8	3	1	44	22	66
Cardston . . . . .	...	...	...	...	...	...	...	...	6	4	7	1	6	12	18
Macleod	3	3	4	3	1	6	3	2	4	4	5	2	28	12	40
High River . . . .	...	...	...	2	1	1	3	1	5	5	4	1	14	9	23
Banff	4	5	5	2	4	2	1	2	1	1	2	3	20	12	32
Edmonton	22	17	20	17	17	19	10	6	15	6	7	1	87	70	157
St. Albert	10	14	10	11	15	3	11	13	9	7	3	...	49	57	106
The Territories.	191	206	228	207	200	190	207	259	235	200	157	108	1251	1137	2388

PUBLIC HEALTH.

The Public Health Ordinance was administered by the Department of the Attorney General up to the twenty-ninth of March, when by order of His Honour the Lieutenant Governor in Council, the administration of the said Ordinance was transferred to the Department of Agriculture.

On the twenty-ninth of April a circular was issued to all medical practitioners in the Territories in which attention was called to the provision of the Ordinance dealing with returns of the occurrence of contagious and infectious diseases. A supply of envelopes and forms for making the statutory returns was furnished each doctor. I regret to state, however, that in spite of the trouble the Department has taken to facilitate the furnishing of these reports, a large number of medical men throughout the Territories have been exceedingly apathetic in fulfilling their duties under the Ordinance. This is all the more strange when one comes to consider that this information is collected chiefly for the benefit of the medical fraternity.

The value of medical statistical information can hardly be overestimated. Indispensable as are reliable agricultural and industrial statistics in all civilised states, facts bearing on the duration of life and preservation of health must ever be considered as of incomparably greater importance. A complete record of the occurrence of infectious and contagious diseases and typhoid fever in the Territories covering a number of years might at any time be of the greatest possible value in defining periodical epidemics, and might lead to the discovery of their causes and the proper remedies. It would seem that this is a matter which should appeal with particular force to our medical practitioners and ensure their hearty co-operation, but the contrary would appear to be the case. It is likely that the cause of the apathy is the frequent returns called for under the Ordinance (monthly). The same end would probably be attained by providing for returns at longer intervals.

Although the Ordinance requires each municipality to appoint a health officer it was found upon inquiry that this provision had in some cases been neglected in the past. A communication was, therefore, directed to the delinquents advising them of the intention of the Department to enforce the provisions of the law in that respect, with the result that a health officer was in each case appointed who has since been in periodical communication with the Department.

Very few characteristic outbreaks of infectious or contagious diseases occurred during the past year. A great many reports as to the prevalence of such diseases were, however, received in the Department from medical men in various portions of the Territories, but in the majority of such cases investigated at the instance of the Department, it was found either that the diagnosis was incorrect or that the information had been sent on the strength of hearsay evidence. Herein lies the difficulty in administering this Ordinance economically and effectively. Numerous cases are also on record where deaths took place presumably from some malignant throat disease, and where probably one or two other members of the same family exhibited symptoms thereof, and where no medical advice whatever had been sought. It is evident that quarantine in such cases cannot be established until the disease has been diagnosed as coming under the provisions of the law. If, however, professional assistance at the expense of the public, is to be procured in every case of that nature, there would be the gravest danger of abuse which the Department would in most cases be

absolutely powerless to check. On the other hand the Department has no power to compel such people to procure medical advice at their own expense.

It has come to the notice of the Department that the provisions of The Public Health Ordinance are very much misunderstood, particularly in the large foreign settlements which have of recent years been established in the Territories. Contagious diseases very often occur in these settlements with fatal results, and no semblance of quarantine is observed. In the greater majority of cases no doctor is employed, and the Department is consequently kept in ignorance of the matter. It is very difficult to convince these people that the indiscriminate intercourse between the inmates of infected houses and other persons in the settlement is a serious offence and fraught with danger. It would be well if a poster were issued containing a synopsis of the more important provisions of the Ordinance and directions for disinfecting, which could be translated into three or four different languages and posted in the various schoolhouses and other public places throughout the country, particularly in the vicinity of our foreign settlements. Printed copies of a memorandum containing the same information might also be furnished all medical practitioners throughout the Territories, so that when a case was diagnosed as coming within subsection (c) of Section 2 of the Ordinance, they would be in a position to furnish their patients with a brief synopsis of the law, clearly setting forth their duties.

A very valuable work could also be done through the farmers' institutes in instructing the farming population of this country in the rudiments of sanitary science. It is indisputable that outbreaks of typhoid fever are usually traceable to imperfect sanitary arrangements, and if it is important to place information before the settler as to the best methods of carrying on his farming operations, there can hardly be any doubt as to the greater importance of imparting information regarding the preservation of both human and animal life. It may be mentioned that this subject is regularly dealt with and discussed at farmers' institute meetings in other provinces. It would also be well if our farmers scrutinised their domestic water supply more closely. It is probably not generally known that the Chemist of the central experimental farm at Ottawa makes tests of well water free of charge. Any person who wishes his well water examined should forward a half pint sample by express, prepaid, to this official.

A number of outbreaks of contagious and infectious diseases were brought to the attention of the Department during the year.

On the seventh of January two children died in the vicinity of Rosthern presumably from diphtheria. In accordance with a request from the Mounted Police, Dr. Stewart visited the family. As the children however, had already been buried, the doctor was unable to ascertain positively the cause of death. Two other cases of throat trouble did not prove to be of a contagious nature.

An outbreak of scarlet fever occurred among the Russian settlers near Josephsburg. Dr. Calder of Medicine Hat visited the spot and reported a number of cases of the above disease as well as four cases of chicken pox and two cases of measles. These settlers arrived at Josephsburg on the fourteenth of March and between that date and the twenty-ninth of March six deaths had occurred, four from scarlet fever and two from chicken pox. Several of the settlers were sick on board the ship. Two women and two children were detained at New York, owing to illness; they arrived at Josephsburg on the twenty-sixth of March and a few days after one child

died. At the date of the report the other child was sick but would likely recover.

On the twenty-second of May a telegram was received from Yorkton to the effect that a large number of cases of contagious disease had occurred and that quarantine was not being properly observed. The Mounted Police authorities were at once advised with a view to having the Ordinance strictly enforced. Owing to the prevalence of a measles epidemic at that point since early in April, with a number of fatalities, coupled with the presence of a very large camp of Doukhobors and Galicians practically right in the midst of the town, more or less of a panic ensued. It appears that there were two cases of scarlet fever, one of which proved fatal. The Police immediately took the necessary steps to quarantine the infected premises. The large camp of Doukhobors naturally proved a continual source of danger to the inhabitants of the town, and the Department of the Interior was, therefore, communicated with and urged to remove them.

On the tenth of June information was received to the effect that a violent contagious disease had broken out amongst the German children west of Davin. Here, also, two children were buried before the medical practitioner had an opportunity to investigate the cause of death. Dr. Carthew was dispatched to the settlement and diagnosed the cases as measles and pneumonia. Three infants died before the outbreak in question was stamped out.

On the thirty-first of July information was received in the Department to the effect that an outbreak of diphtheria had occurred in St. Josephs' Colony, amongst the German settlers at that point. Dr. Carthew, however, reported that the disease was an epidemic of scarlet fever, which was confined to three houses. One death had occurred.

One of the most serious epidemics of the season occurred at Swift Current during the early part of July, when a number of suspicious cases of throat trouble were brought to the notice of the Department. Dr. Smith of Medicine Hat was authorised to have bacteriological examination made of suspected cases, which were finally diagnosed as true diphtheria. Arrangements were immediately made for an efficient quarantine and after the epidemic had been stamped out precautions were taken to have the premises thoroughly disinfected. One child died and the remaining patients made satisfactory recovery.

On August 7 Dr. Stevenson of Moosomin reported five cases of throat disease, exhibiting all the symptoms of diphtheria, twenty miles south of Moosomin. A strict quarantine was maintained and every case made recovery. The school house which the children had been attending was closed and thoroughly disinfected.

On August 3 a report received from Dr. Field of Rosthern to the effect that an outbreak of measles had occurred in the German settlement. The matter was referred to the Commissioner of Immigration. Four houses were quarantined. One child died.

On September 26 twenty cases of diphtheria were reported in the vicinity of Wetaskiwin. Further investigation, however, proved that the alarm was groundless.

On November 20 a telegram was received from the Commissioner of Immigration stating that a contagious disease had broken out in the Doukhobor settlement. Arrangements were made with the Department of the Interior for a doctor to proceed to the spot from Rosthern.

On December 10, diphtheria broke out at Estevan. A vigorous quarantine was established and no casualties occurred.

On April 2 intimation was received from the North-West Mounted Police to the effect that small pox had broken out at Havre (Montana) and at Williston (North Dakota). Steps were immediately taken to protect the North-West Territories from the disease, and a quarantine station was erected at Coutts, with Lr. Galbraith of Lethbridge as health officer in charge. Arrangements were made with the railway authorities to have all passengers on north bound trains examined at Coutts and if necessary detained, and to have all suspicious goods, clothing or personal effects fumigated. The mayor of Great Falls was communicated with and a public notice printed, warning intending travellers to Canada of the restrictions imposed, and posted in a large number of places throughout Montana. All health officers of municipalities in the Territories were advised of the action of the Department and the following notice was sent them by the quarantine officer in all cases where passengers from Montana entered the Territories en route to any incorporated town:

Sir,—I beg to inform you that the following passenger from Montana passed this day through Coutts into Canadian Territory bound for your town.

Name.....

Age.....

Description.....

You are probably aware that small pox is epidemic in Great Falls, Montana. Although I have no reason to suspect that the above mentioned person has been exposed to contagion, I have thought it well to advise you, in order that he (or she) may be subjected to such surveillance as you may deem advisable, so as to be isolated at the first indication of illness.

The quarantine station at Coutts was dispensed with at the expiration of the original Order in Council of the third of November, but quarantine was maintained for a period of fourteen days thereafter with the headquarters of the health officer at Lethbridge, thus reducing the expense considerably. On the ninth of November a letter was received from the mayor of Great Falls, Montana, in which he stated that the small pox epidemic was now perfectly under control and that the last case would soon be discharged.

I herewith beg to append a statement of the occurrence of contagious or infectious diseases within municipalities during the year and also a schedule showing the causes of deaths returned under The Vital Statistics Ordinance. The latter, however, requires some explanation. Ninety-nine deaths from tuberculosis are reported, which at first sight would indicate an appalling death-rate from that cause. An analysis of the records shows that over twenty-four per cent. of these deaths occurred in the registration district of North Qu'Appelle, amongst the halfbreed population there. Anyone acquainted with their mode of living will not wonder at the result. The poor and badly cooked food tends to further weaken the power of resistance of constitutions already predisposed to the ravages of the *bacillus tuberculosis*, while the overcrowded and ill ventilated shacks and entire ignorance of the simplest precautionary measures on the part of patients, furnish the most fatal means of extending the field of the death-dealing microbe. Another cause of the high death-rate from tuberculosis is the reputation of the Territories for immunity from disease. The rarified air of the semi-arid portion of the Territories and the generally favourable climatic conditions have claimed the attention of medical practitioners all over the world; a number of almost miraculous recoveries from pulmonary tuberculosis have further added to the reputation of the Territories as a health

resort for consumptives. The result is that patients in more or less advanced stages of the disease are continually coming into the country in the hope of finding relief and while, as a rule, they are not disappointed, some derive no benefit from the change and finally succumb to the disease. The Calgary district, which of recent years has been the Mecca of such unfortunates, therefore, shows sixteen deaths from tuberculosis, or about sixteen per cent. of the total for the Territories. Making an allowance for this artificial inflation of our death rate from this disease, it will be found that the normal death rate from tuberculosis is very small indeed compared with that of other countries.

STATEMENT OF CONTAGIOUS OR INFECTIOUS DISEASES OCCURRING
WITHIN MUNICIPALITIES DURING THE YEAR.

MUNICIPALITY.	DIPHTHERIA	TYPHOID FEVER	MEASLES	GERMAN MEASLES	SCARLET FEVER	SCARLETINA	TOTAL
Edmonton.....	1	1	.....	3	.....	.....	5
Strathcona.....	5	2	9	2	.....	.....	18
Calgary.....	2	16	1	.....	10	3	32
Macleod.....	2	8	26	.....	.....	.....	36
Lethbridge.....	6	2	1	.....	12	.....	21
Medicine Hat.....	5	4	4	.....	.....	.....	13
Moose Jaw.....	.....	24	1	.....	.....	.....	25
Regina.....	2	4	.....	.....	.....	1	7
Indian Head.....	.....	.....	.....	.....	3	.....	3
Wolseley.....	.....	.....	.....	.....	.....	.....	0
Whitewood.....	.....	3	.....	.....	.....	.....	3
Moosomin.....	2	1	45	.....	.....	.....	48
Prince Albert.....	.....	3	.....	.....	3	.....	6
The Territories.....	25	68	87	5	28	4	217

DEPARTMENT OF AGRICULTURE

MORTUARY STATISTICS, 1898—Continued.

CAUSE.	TOTAL	AGE										SEX		BORN IN				Doctor at- tended	MONTH													
												M.	F.	Canada	United States	Great Britain & Ireland	Other Countries		?													
		0 to 1	1 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 60	60 to 70	70 to over																						
Brought forward	448	127	75	40	38	71	51	22	22	2	235	213	304	27	64	38	338	49	45	51	45	25	43	38	28	43	31	19	31	Dec.		
Stillborn	9	9	...	...	...	...	...	...	...	...	5	4	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Suicide	8	...	...	3	1	1	...	...	...	...	6	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Septicæmia (not puerperal)	6	...	1	...	2	2	1	...	...	...	2	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Syphilis	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet fever	10	2	3	3	1	...	...	...	...	...	1	4	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Senile debility	11	...	...	...	...	...	...	...	...	...	5	6	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Senile gangrene	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Senile dementia	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spina bifida	2	1	1	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Strangulation (not specified)	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sarcoma of hip	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shock from operation	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Strangulated hernia	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tuberculosis	99	6	19	22	12	27	7	4	1	1	54	45	82	3	5	9	52	16	6	12	10	8	8	9	6	6	5	8	5	...	...
Typhoid fever	14	...	4	3	2	1	...	...	...	...	9	5	9	1	3	1	14	1	3	1	1	1	2	1	1	1	1	3	1	...	...
Tonsillitis	3	...	1	1	1	...	...	...	...	...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teething	4	2	2	...	...	...	...	...	...	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tumours (not specified)	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Uremia	3	...	...	1	1	1	...	...	...	...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown, not stated and unascertain- able	129	64	23	17	4	6	4	5	3	3	69	60	101	2	...	26	...	12	11	16	14	15	9	9	8	9	11	9	6	...	...
Whooping cough	5	4	1	...	...	...	...	...	...	...	3	2	2	1	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	759	216	124	89	63	116	69	37	37	8	405	354	535	37	88	83	456	82	72	90	81	53	63	61	47	68	51	45	46	...	...

N.B.—The figures in column "Doctor attended" indicate either that medical advice was obtained or that cause of death was certified by medical man or that an inquest was held.

TERRITORIAL HOSPITALS.

During the year a set of forms was prescribed suitable for the returns of Territorial hospitals. Owing, however, to the rather complicated system under which the hospital grant is apportioned, it was found that very little time was saved in using these forms, most of the returns having to be sent back for corrections and additions. I would suggest for your consideration the advisability of having legislation introduced providing for the payment of hospitals on a basis of total days of hospital treatment, instead of as heretofore for each hospital day with a further payment for each day's free treatment of patients. The following is a schedule showing the work of Territorial hospitals during the current departmental year:

HOSPITAL	TOTAL NUMBER OF PATIENTS	TOTAL NUMBER OF DAYS' TREATMENT	NUMBER OF DAYS FREE TREATMENT
Saltcoats	42	910	698
Holy Cross	277	5,189	2,195
Medicine Hat	367	7,691	5,859
Calgary	305	4,675	2,430
Edmonton	331	5,586	4,151
Galt Hospital	118	3,352	2,092
Macleod	108	2,177	1,021
Regina	75	1,608	1,054
St. Albert	18	509	488
The Territories	1,641	31,697	1,9988

No returns were received from the St. Albert Hospital for the half year ending on the thirty-first of December last.

It is understood that new hospitals are to be provided at Edmonton, Prince Albert and Moose Jaw. At the two latter points such institutions are very badly needed. It seems curious that, until the establishment of the cottage hospital at Regina, there was absolutely no hospital accommodation in the central and southerly portions of Eastern Assiniboia.

INCURABLES

The following is a report of the medical superintendent of the Medicine Hat General Hospital upon each of the incurable patients at present domiciled in that institution under the arrangement entered into between the Territorial Government and the hospital.

William Bowman: Age 66. Was admitted to hospital December 20, 1893. His residence previous to admittance was Edmonton. He is suffering from chronic heart disease; he is able to get about to some extent but is feeble.

Catherine Mohr: Age 30. Was admitted March 27, 1895. Her residence previous to admittance was Wolseley. She is suffering from hemiplegia or partial paralysis of the arm and leg on the left side. This is the result of apoplexy. The paralysis of the leg is only partial and she is able to get about but with difficulty and with a decided limp. Her arm is useless.

Charles Bradford: Age 80. Was sent from Calgary Hospital and admitted May 14, 1898. He is suffering from general paresis of old age. He is

able to be about to some extent but is very weak and feeble both physically and mentally.

John Smith was sent from Prince Albert by the Department of Agriculture and was admitted May 12, 1899. He is suffering from general paralysis. He was able to be about to some extent when admitted, but he became weaker and is now a bed-fast patient. His condition is becoming worse.

J. J. Taylor: Age 23. Was sent from Calgary General Hospital and admitted August 9, 1899. Suffering from a chronic affection of the spinal cord. He is a bed-fast patient, being unable to get up or about in any way.

COLONISATION.

The past year has been an historical one as regards the influx of settlers into the Territories. The following schedule compiled from information received from the Commissioner of Immigration shows the volume of immigration for each month of the years 1898 and 1899:

YEAR	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
1898	133	166	1,042	1,702	1,129	1,124	809	308	349	228	300	173	7,563
1899	2,187	2,089	1,123	2,274	2,100	527	436	298	375	329	301	228	12,384

To the total for 1899 should be added 2,340 Doukhobors and 3,824 Galicians, which brings the total immigration into the Territories for 1899 up to 18,548 souls, thus exceeding the volume of immigration for 1898 by 145.24 per cent.

Through the courtesy of the Commissioner of Dominion Lands, I am able to append a statement showing the number of homestead entries at the various agencies in the North-West Territories for the calendar years 1898 and 1899.

AGENCY	1898	1899
Alameda.....	177	507
Yorkton.....	165	397
Prince Albert.....	143	513
Battleford.....		8
Regina.....	475	888
Lethbridge.....	195	286
Edmonton.....	623	936
Red Deer.....	108	537
Calgary.....	123	262
The Territories.....	2,009	4,337

Settlement in South-eastern Assiniboia did not reach any phenomenal proportions during the year. The bulk of the new settlers there came from the Province of Ontario. A number of Germans and Mennonites also came into the district, settling along the main line of the Canadian Pacific

Railway. The extension of the Pipestone branch into the Territories will no doubt have the effect of bringing a large volume of immigration into the district south of the Moose Mountain. One of the noticeable colonisation movements in this portion of the Territories during the year was the large settlement which went into the district tributary to Weyburn and Yellowgrass on the Soo Line. All the land in the immediate vicinity of Weyburn has now been absorbed and the settlement is growing fast towards the north.

Very few immigrants went into Western Assiniboia. As this district is principally adapted for cattle and sheep ranching on a large scale, it does not, of course, offer the inducements to new settlers of small means which other portions of the Territories possess. The district itself enjoys a most excellent climate and it is difficult to prophesy the effect the introduction of irrigation would have.

North-eastern Assiniboia, or rather the country contiguous to the Manitoba & North Western Railway, received a very large immigration during the past year. The bulk of the Doukhobors and a number of Galicians were settled north of Saltcoats and Yorkton, and quite a large number of settlers came into the district from the United States.

The District of Saskatchewan received a share of the Doukhobor settlers. With the completion of a transcontinental railway along the Saskatchewan valley and the extension of the Manitoba & North Western Railway to Prince Albert, there can be no doubt that the bulk of the immigration of the Territories would go into that district, but owing to the present absence of colonisation railways, Saskatchewan is not as widely known as other portions of the country.

The lion's share of the immigration for the year undoubtedly went into Northern Alberta. Several hundred Galicians were settled along Beaver Creek near Edmonton and in other parts of the district, and a vast volume of immigrants from the United States, of Canadian, German and Scandinavian origin, also found their way into Northern Alberta. In this portion of the Territories extensive and prosperous settlements are springing up along the line of railway and the development of the various market towns during the year was marvellous.

Very few settlers came into Central Alberta. This district, being at the present time principally devoted to ranching on a moderate scale, will not of course attract settlement as long as agricultural lands, conveniently situated, can be obtained in Northern Alberta, or until the general introduction of irrigation brings about a change toward smaller holdings and intensive farming. All the favorable conditions of market, climate and irrigation are present, but settlers inexperienced in the use of water for irrigation purposes, naturally prefer homesteads in the humid districts of the Territories.

Although very little has been heard of colonisation developments in Southern Alberta, one of the most important projects in this respect has quietly been materialising between Lethbridge and the international boundary. It is estimated that some 2,500 Mormon settlers have arrived in that portion of the country from Utah, Idaho and Missouri. A very large irrigation canal is at present in the course of construction by the Alberta Irrigation Company, and an excellent feature of this project is the arrangements entered into with the Mormons, under which the latter perform work on the construction of the ditch and receive, in part payment for their services, land owned by the Alberta Railway & Coal Company,

served by the said irrigation system, thus combining the reclamation of a large tract of land, at present quite unproductive, with a well conceived plan for colonising it. The Mormon church appears to have interested itself in the settlement of this district, and within a very few years one of the most prosperous and thickly populated settlements of the Territories will doubtless be established in Southern Alberta.

Although the area of land purchased in the Territories by settlers and others from the Dominion Government and the Canadian Pacific Railway Company has no direct bearing on the question of colonisation, it indicates to a very considerable extent the degree of prosperity of the country. Below will be found a schedule showing the comparison between the land sales of the Dominion Government and the Canadian Pacific Railway Company for the years 1898 and 1899:

	1898	1899
Dominion Government	Unknown	24,500
Canadian Pacific Railway Co.....	174,493	237,068

The most significant colonisation movement into the Territories during the year was undoubtedly the influx of Doukhobors. These people originally had their home in the Crimean peninsula. In the year 1840 they were ordered to the slopes of the Caucasus where they have since remained in scattered villages near Tiflis. They had the misfortune to incur the displeasure of the Russian Government, and were consequently subjected to some persecution. Several wealthy individuals and churches interested themselves in these people and obtained for them the necessary permission to emigrate. As soon as this permission was granted some were taken charge of by the Cyprus Colonisation Committee and settled on the island of Cyprus. For some reason or other they did not appear to have made a success of colonisation in that island and many of them were afterwards sent to the North-West Territories, together with a large number of those who had been left in Russia.

The whole movement resembles the historical Mennonite colonisation scheme very much, and if the Doukhobors only turn out half as well as the Mennonites did in Manitoba and in the Rosthern District, the country will have every reason to congratulate itself upon having extended the hand of welcome to them.

I took occasion in last year's report to comment upon the absence of suitable immigration literature dealing exclusively with the North-West Territories. Owing to pressure of other work in the Department it was found impossible to deal with the matter during the year. Owing, however, to the very excellent literature which was issued by the Department of the Interior during the latter part of 1898 and the past year, the want of such a pamphlet is not as pressing now as was the case then.

DEPARTMENTAL LIBRARY.

The good work of gathering together a reference library on agricultural subjects, has been continued during the year. Needless to say, the departmental library has been found of the greatest possible assistance in dealing with the various technical questions continually coming before the Department. The library was properly classified and indexed during the year and now comprises the following books and publications:

Books on general agricultural subjects	71
Reports of Government departments	73

Report of agricultural colleges.....	22
Internal management of agricultural experiment stations	23
Soil, fodder and fertiliser investigations.....	33
Experiments with grasses and forage plants	26
Experiments with grains	45
Experiments with roots and garden truck	77
Arboriculture, horticulture and silviculture	104
Irrigation, artesian water and moisture investigations.....	24
Noxious weeds and animals	22
Veterinary investigations	20
Dairy investigations	61
Entomological reports	58
Statistical reports	18

Total..... 677

The Department is indebted to the following institutions for bulletins and reports on various agricultural subjects: Department of Agriculture, Ottawa; Department of Agriculture, Ontario; Department of Agriculture, Manitoba; Department of Agriculture, New Brunswick; Department of Agriculture, British Columbia; Department of Agriculture, Nova Scotia; Department of Agriculture, Quebec; Department of Agriculture, Sydney, New South Wales; Agricultural Bureau, Adelaide, South Australia; Department of Agriculture, Brisbane, Queensland; Department of Agriculture, Hobart, Tasmania; Department of Agriculture, Wellington, New Zealand; Department of Agriculture, Cape of Good Hope, South Africa; Department of Agriculture, Melbourne, Victoria, Australia; Industrial College, University of Nebraska; Michigan Agricultural College; Montana College of Agriculture; School of Agriculture of the Nevada State University; Kansas State Agricultural College; Iowa State College of Agriculture and Mechanic Arts; Agricultural College of Utah; Department of the State Agricultural College, Colorado; College of Agriculture, Wyoming; College of Agriculture, University of Wisconsin; College of Agriculture, University of Minnesota; South Dakota Agricultural College; Washington Agricultural College; Agricultural Experiment Station, University of Idaho; North Dakota Agricultural College; State Agricultural Society, Hameline, Minn.; Department of Agriculture, Bismark, N.D.; Bureau of Agriculture, Helena, Montana; Department of Agriculture, Washington; Agriculture Experiment Station, Logan, Utah; New York Agricultural Experiment Station, Geneva, New York; Cornell University Experimental Station, Ithaca, New York; Oklahoma Agricultural College, Stillwater, Oklahoma; Oregon State Agricultural College, Corvallis, Oregon; Ohio Agricultural Experiment Station, Columbus, Ohio; The Directorate, Hungarian Dominion Agricultural Society, Budapest, Hungary.

The various agricultural and pastoral periodicals received in the Department have been carefully read; owing, however, to lack of the necessary time, I had reluctantly to decrease the number of these papers. A few changes have also been made, as it was found that some of the periodicals received dealt principally with problems of no particular interest to this country. The following is an amended list of periodicals received regularly in the Department:

The Breeder's Gazette, Chicago, Ill., U. S. A.; The Farmer's Advocate, Winnipeg, Man.; The Orange Judd Farmer, Chicago; The Irrigation Age, Chicago; Nor'-West Farmer, Winnipeg; The Queensland Agricultural

Journal, (complimentary); The Live Stock Journal, England; The Country Gentleman, Albany; Farming, Toronto; The Scottish Farmer, Glasgow; Journal of Agriculture and Industry, Adelaide, South Australia, (complimentary); The Agricultural Gazette, Hobart, Tasmania, (complimentary); The Canadian Poultry Review, Toronto; The Reliable Poultry Journal, Quincy, Ill.; The Rider and Driver, New York; The Pastoralist's Review, Melbourne, New South Wales; Tidsskrift af Landokonomie, Copenhagen, Denmark; Journal D'Agriculture Pratique, Paris, France; Nordske Landmandsblad, Christiana, Norway.

There is one pleasing feature of the work of dealing with the various problems confronting the Department, and it is one which, though only briefly commented upon here, merits appreciation. I refer to the attitude of the press, both general and technical. It would be strange indeed if, in an agricultural country such as this is, newspapers did not devote considerable attention to agricultural matters, but one cannot fail to be struck with the entire absence of items of the 'large egg' and 'big gooseberry' character to be found so often in newspapers of older parts of the continent, and the amount of space devoted to the intelligent discussion of agricultural and pastoral matters affecting the welfare of the settler. There is, evidently, an earnest desire on the part of newspaper publishers to keep the readers of their journals fully posted upon all matters dealing with their interests. That this is so is a testimony to the demand of our people for information upon all that is worth knowing, and has given much encouragement to the Department in such efforts as it has been able to make to do something towards the amelioration of the conditions under which pioneers in a new and undeveloped country are required to live.

CLERICAL WORK OF THE DEPARTMENT.

Contrary to expectations, the volume of work in the Department did not decrease during the past year, but showed rather an increase over 1898 in spite of the fact that the abnormal increase of work occasioned by the reorganization of the brand work in that year was largely completed at the beginning of 1899. The permanent staff of the Department consisted of the following:

- One chief clerk and accountant,
- One clerk in charge of brand records,
- One clerk in charge of correspondence records,
- One clerk (typewriter and stenographer).

During the year extra assistance was employed from time to time in connection with the preparation of the Brand Book manuscript and with statistical calculations.

Considering that some 2,609 deposits were made in the Department during the past fiscal year and that each of these required the making out of a receipt, an entry in the cash book and final deposit in the Treasury Department, it will be realised that the work devolving upon the accountant is no small item. In addition to this, some 450 vouchers were received, checked and prepared for payment, as well as the various statutory returns from agricultural societies and Territorial hospitals, which latter form in themselves an important item of work.

An examination of that portion of the report dealing with brand allotments will reveal the fact that the clerk entrusted with this branch of the Department's work was kept extremely busy.

The letters received in the Department during the year number 10,718, and the letters sent 16,050 in addition to 6,388 circulars. This work was practically all performed by two typewriters and stenographers, one of whom was an extra clerk employed only part of the time, and to some extent by the clerk in charge of the correspondence records, the bulk of whose time, however, is taken up with the filing of incoming correspondence.

The Territorial Inspector of Noxious Weeds has to some extent been employed at inside work in connection with the administration of The Noxious Weeds Ordinance.

I am again pleased to be able to testify to the efficient work which has been done by the departmental staff during the year and the willingness to work after hours exhibited at all times when the press of work rendered it necessary to make a special effort.

I have the honour to be,

Sir,

Your obedient servant,

CHAS. W. PETERSON,

Deputy Commissioner.

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